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NATURE NOTES,

THE SELBORNE SOCIETY'S MAGAZINE

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EDITED BY

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HE PRAYETH BEST WHO LOVETH BEST
ALL THINGS BOTH GREAT AND SMALL:
FOR THE DEAR GOD WHO LOVETH US,
HE MADE AND LOVETH ALL.

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ERRATA.

P. 83, ll. 18 and 17 from bottom, read "Cowpen" bird (*Molothrus bonariensis*); l. 15 from bottom, for "Molobrus" read *Molothrus*.

P. 220, l. 25, for "from" read "of."

Nature Notes:

The Selborne Society's Magazine.

No. 121. JANUARY, 1900. Vol. XI.

SELBORNIANA.

The Special Need of Donations to the General Fund of the Selborne Society.—As members of the Selborne Society are aware, there appeared some years ago a rather serious deficiency in the Society's annual account. This was mainly due to the transference to Branches of members previously subscribing to the general fund, and was an unfortunate particular result of an otherwise most beneficial policy.

The deficit has, thanks to donations and economy, been gradually reduced, but not yet extinguished. Last year it stood at £69 12s. 7d. It is as yet too early to state what the result for 1899 will be, as the amount of some items of income (as the contributions by Branches) cannot at present be ascertained. But, though the income for the past year may be expected to be sufficient at least to meet the expenses of the year, it is quite certain that unless donations be received there can be no further substantial reduction of the deficit.

In January members pay their annual subscriptions to the Secretary. The occasion seems to offer a convenient opportunity for sending donations. It would need but a moderate response to this suggestion to finally settle the difficulty, and it ought to be settled. A provisional account for 1899 will be stated in February.

The Royal Buckhounds.—The Council have authorised the Secretary to sign, on their behalf, the Memorial addressed to Lord Salisbury, or the head of the Government at the time, at the initiative of the Sports Committee of the Humanitarian League, praying that no further appointment may be made to the post of Master of the Royal Buckhounds. It may be

pointed out that in so doing they have followed the example of the Royal Society for the Prevention of Cruelty to Animals, of which Her Majesty herself is Patron.

CROHAM HURST.—Members of the Society may possibly like to hear how matters are progressing in regard to the acquisition of Croham Hurst, Croydon.

A proposal to spend £20,000 on its purchase was defeated in the Croydon Council, by one vote only, in last July, and the Preservation Committee were encouraged to persevere in their efforts by the closeness of the division. Many of its members are also interested in the preservation of Grange Wood, an estate of twenty-five acres on the north side of the borough, but at present the exorbitant price of £33,000 is asked for this land. It is thought that, as the two estates serve different ends of the borough, a *modus operandi* may be found in amalgamating the two schemes, and acquiring them both by a single purchase. An obstacle lies in the enormous price asked for Grange Wood, but this matter, it is hoped, may be open to negotiation.

EDWARD A. MARTIN.

PHILISTINISM.—We have hitherto believed that "Liberal Churchmen," who sometimes style themselves Broad Churchmen, were distinctly on the side of "sweetness and light," of a respect for Nature, its wild beauties and other amenities, and of the demand of overworked humanity for leisure for self-improvement. We are, therefore, surprised to see in the pages of *The Church Gazette* a silly article of which the following is a sample :—

> Persons have been met with—we will not reveal their sex—who object to, and even seriously denounce, such seemingly guiltless pursuits as that of using a trowel to remove a wild primrose or violet from a country bank into a private garden; or of leaving about bits of paper and *débris* after an open air meal in a wood; or again, of going shopping upon a Saturday evening in a busy suburb. A plain man will stare at all this, and ask, "But what in the world is the matter here?"
>
> Well, our conscientious friends think there is a great deal in the matter. Each time you dig up a primrose you are infringing the claims in it of a thousand other persons, by depriving each of them of his one-thousandth share of that primrose. If you neglect to remove the scraps of your picnic it is just possible they may annoy the sensitive eye of another who might *conceivably* choose the identical spot for his meal. Again, should you insist on shopping late on Saturday, you will give some extra trouble to worthy shopkeepers who are busy already.

PARK-CEMETERIES.—Mrs. A. B. Martino, of Edgbaston, has republished, with additions, from *Park and Cemetery*, through Messrs. Cornish Brothers, of Birmingham, her excellent article on "Park-Cemeteries, Garden-Churchyards," at the modest price of a penny. It is a cogent appeal for the really beautiful as against those ghastly arrays of monstrosities in stone, our modern cemeteries. As to nursery-gardens being made attractive to the general public, we would call Mrs. Martino's attention to the case of Messrs. Paul's arboretum in Epping Forest, which,

by the award of the arbitrator under the Epping Forest Act, is open to all. We wish Mrs. Martino success in her scheme.

HAMPSTEAD ASTRONOMICAL AND SCIENTIFIC SOCIETY.—We welcome the advent of a promising society, already endowed with a 10½ inch reflecting telescope, in close proximity to our Northern Heights Branch, with a tried Selbornian, Mr. Basil Martin, of 7, Holly Place, Hampstead, as Secretary.

HOW SCENERY IS MADE.

I.—ALLUVIAL PLAINS.

EARTH, air, water and fire were called the four elements by the ancients; and though we no longer regard them as such, it is the second and third which do nearly all the work to carve and chisel the first; whilst the fourth has also aided, by putting the rocks* into Nature's melting pots, and then pouring out the contents to harden and form curious features, such as the Giant's Causeway in Antrim, Arthur's seat at Edinburgh, Mount Sorrel near Leicester, and the rounded "tors" in Cornwall.

The first thing to know is what are the different kinds of rocks of which the surface of the earth is composed. We must in imagination strip off the earth used as arable or pasture lands, and lay Nature's skeleton bare. We cannot do this, but we can generally find out what is underneath by exposures in sea-cliffs, quarries, river-valleys, railway-cuttings, &c.

As the readers of NATURE NOTES travel about, what I want them to do is *to observe* the nature of the rocks wherever they go, and their relationship to the scenery; and to see how the latter has been produced, and what are the causes always at work which modify the face of the country, from county to county, as they travel by any of our great railways across England.

There are three chief classes of rocks, as follows:—

(1) *Arenaceous:*—consisting of sand, gravel, sandstone and gritstone. After being subjected to great heat these form a solid quartz-rock.

(2) *Aluminous:*—commencing as clay-mud, this dries and forms shale: then, by pressure and heat, it can become slate.

(3) *Calcareous:*—rocks of this nature are composed almost always of carbonate of lime, and are known as chalk, limestone and marble, which is a limestone hard enough to be polished. If it has been subjected to heat, its particles become crystalline; and it then forms statuary marble.

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* Geologists give the general name "rock" to any continuous mass, soft or hard.

We require to know where these are to be found, how they got there, what is the scenery peculiar to each, and of what uses are these rocks to man respectively.

(1) Arenaceous.—Sand and gravel are familiar to all, especially along our eastern, south-eastern, and south coasts, where the beach is obviously the result of the sea wearing down the chalk-cliffs from which the flint-stones—seen in horizontal rows in chalk-quarries—drop out, are broken up and rounded by the waves, the fragments being again and again broken and rounded, till they are too small to break any more, when they become sand, composed of smooth and rounded grains.

If sand in the course of ages hardens by pressure, it becomes sandstone, as at Hastings, where this rock is *again* becoming a sea-beach by the action of the waves.

But a great deal of sand and gravel is made by rivers. These have not the force of great waves on a beach, so that the sand is "sharper," and is much used in making concrete and mortar. A good example of the old Thames gravel is seen in the cutting near Acton; and if the reader will look on the north side he will notice how the layers of sand and gravel or clay lie at various angles instead of being all horizontal. This is in consequence of little currents in the water changing their direction, possibly by the action of the wind, at the time they were deposited in shallow parts. It has been called "false bedding."

Underneath the gravel is the London clay, some hundred and more feet thick. This prevents the water from escaping; and the gravel, acting like a sponge, stores it up. Before the water companies were established, London was supplied with water from wells sunk in the gravel; and consequently no houses were built beyond the furthest extent of gravel on either side of the Thames. Thus Marylebone Road on the north, and Brixton on the south, were the limits in those directions.

Now, whenever you see a gravel pit in the country away from the sea, you may be pretty sure it was due to the nearest river.

You may have noticed that rivers, as they approach the sea, run through broad and flat valleys, such as that seen on either side of the Thames on travelling to Reading. Sometimes valleys are miles in width, in which the river curves about. Such is called an "alluvial plain," and is entirely due to the gravel, sand and clay spread over it by the water, when it was much more extensive than now.

The Fen-country of Lincolnshire and Cambridgeshire is entirely due to the sluggish rivers of that part of England. The "fall" being very slight, the materials brought down from the interior of the country got deposited too soon, instead of being swept out to sea; so that the rivers "silted" up, and the water was thrown back and overflowed the country. Thanks to artificial drainage the fen-land is now nearly all recovered, cultivated and inhabited.

Lastly, what uses do these materials supply us?

If you go out of London by the Uxbridge Road you will see extensive brickfields, the bricks being made of a superficial layer of clay about four feet thick, which, being lighter than sand, was deposited last. It has come out of the chalk, for while the white chalk was *dissolved* in water, the clay remained in suspension in the water till it gradually subsided, and so made brick-earth.

To build houses with bricks one requires mortar. This is made of burned chalk-lime, good "sharp" river sand, and water. It is often necessary to put a "concrete" floor to a house, to keep out any water that may be in the gravel below. To make this, two parts of pebbles out of gravel, one part of sand, and about one-eighth of lime are mixed together. Then when water is poured upon it, it soon consolidates into a hard bed, which prevents any water or damp rising through it.

GEORGE HENSLOW.

LITERATURE OF FIELD AND HEDGEROW.

THERE are very few men who have not only read nature with rare insight, but who have also written about her with rare faculty. According to Walter Besant, "Literature can show but two or three—Gilbert White, Thoreau and Jefferies—but the greatest of them all is Jefferies" ("Eulogy of R. Jefferies," p. 47). We propose to compare the writers whom Besant has thus singled out. One remarkable faculty they possess in common: each is able to pack a commonplace, small locality with the wonders of a world, and instead of being hampered by a narrow range of observation, each seems to find more in it than he has time or tongue to tell. This is particularly noteworthy with regard to Jefferies. As a boy he was wildly adventurous and longed to travel. He even ran away to France, with the intention of walking to Moscow, but was driven back by want of funds and ignorance of language. Soon afterwards a trip to New York had to be renounced. Yet before he died he was able to write: "I do not want change, I want the same old and loved things, the same wild flowers, the same trees and soft ash green; the turtle-doves, the blackbirds, the coloured yellow-hammer sing, sing, singing so long as there is light to cast a shadow on the dial, for such is the measure of his song: and I want them in the same place. Let me find them morning after morning, the starry-white petals radiating, striving upwards to their ideal. Let me see the idle shadows resting on the white dust; let me hear the humble-bees, and stay to look down on the rich dandelion disk. Let me see the very thistles opening their great crowns—I should miss the

thistles; the reed grasses hiding the moor hen; the bryony bine, at first crudely ambitious and lifted by force of youthful sap straight above the hedgerow to sink of its own weight presently and progress with crafty tendrils; swifts shot through the air with outstretched wings like crescent-headed shaftless arrows darted from the clouds; the chaffinch with a feather in her bill; all the living staircase of the spring, step by step, upwards to the great gallery of the summer—let me watch the same succession year by year" (Besant's "Eulogy of R. Jefferies," pp. 226-7).

His wish was gratified, for he never left the southern counties, and spent a great part of his life on one small tract of downs near Swindon. At first this county had appeared to him "dull and monotonous," but he ended by describing it in such wonderful terms that none could believe such a place existed: "Men turn their faces away from me, so that, perhaps, after all, I was mistaken, and there never was any such place, or any such meadows, and I was never there. And perhaps, in course of time, I shall find out also, when I pass away physically, that, as a matter of fact, there never was any earth." As to White, we do not know his name apart from Selborne. That of Thoreau is equally allied to "Walden"—his cabin in the woods, where we are too apt to picture him a life-long hermit. As a matter of fact, his retreat only lasted two years and two months, and sometimes he confesses to have enjoyed a "surfeit of human society and gossip." This may well have been the case, for the town of Concord was only a mile and a half away, and a high road ran past the hut and patch of cultivated ground which constituted his small estate. Less than half a mile away he must have been able to hear the trains pass. There may have been a special siding up to his door, for aught we know. His determination to cling to a single spot has something grotesque about it. A mere instinct or necessity in the case of Jefferies and of White becomes a principle in Thoreau, and he talks about it too much: "I think nothing is to be hoped from you if this bit of the world under your feet is not sweeter to you than any other;" and he remarked that "most of the phenomena" (concerning Kane's arctic voyage) "might be observed in Concord." "The grey squirrel and rabbit are brisk and playful in the remote glens . . . Here is our Lapland and Labrador, and for our Esquimaux and Knistenaux, Dog-ribbed Indians, Nova-Zemblaites and Spitzbergeners, are there not the ice-cutter and wood chopper, the fox, musk rat and mink?" This frame of mind is recommended in a charming passage by Geddes, too long to quote. For the geographical botanist, "Each little scene stretches itself over the world map, as if by enchantment," even though some great manufacturing town be only two miles away. The passage may be taken as a hint to members of the Selborne Society. But to return to Thoreau. We fear he was no more a genuine naturalist than he was a genuine hermit. Even an admiring biographer owns that "he did not love bird or flower for their own sake, with the disinterested

love of a Gilbert White; it was their 'fine effluence' that was his guest, "and what the sceptical reader cannot help feeling is often merely the reflection of Thoreau's own too prominent personality.

"Ah! I have penetrated to those meadows on the morning of many a first spring day, jumping from hummock to hummock." . . . . (it was fine weather, and "all things must live in such a light.") . . . . "O death, where was thy sting? O grave, where was thy victory then?"

"I am glad to have drunk water so long, for the same reason that I prefer the natural sky to an opium-eater's heaven."

"I have been thrilled to think that I owed a mental perception to the commonly gross sense of taste, that I have been inspired through the palate, that some berries which I had eaten on a hill-side had fed my genius."

"I have found repeatedly, of late years, that I cannot fish without falling a little in self-respect."

This is not natural history, it is Thoreau. And even when he gets away from himself he often strikes an unnatural note, as when he compares mountains to "rosy-cheeked schoolboys." Jefferies in his boyish struggles after style was equally forced; but he was forced on conventional lines, and one feels the young writer, as when he says: "To me music is like a spring of fresh water in the midst of the desert to the wearied Arab." In its maturity, however, the style of Jefferies is not forced and does not strike one as egotistic. No wordy tricks are plastered on to common-places in order to give them a beauty and interest not properly their own. Take away his peculiar language and you take away all he wishes to tell you. And take away his references to himself and the human interest goes. You miss the companion who has you by the hand, who drags you after him over hedge and ditch, determined you shall share all his enjoyment. Jefferies is a man first—Jefferies afterwards. Thoreau is always Thoreau, —a man determined to be exceptional. Contrast the singular simplicity of White, whose personality disappears entirely behind his intense, overwhelming interest in nature. One can forgive him for *appearing* to take no thought about the slave trade, or about labouring life in his own county. "No rumour of the revolt of the American colonies seems to have reached him. 'The natural term of an hog's life' has more interest for him than that of an empire. . . . . All the couriers in Europe spurring rowel-deep make no stir in Mr. White's little Chartreuse; but the arrival of the house martin a day earlier or later than last year is a piece of news worth sending express to all his correspondents." (See some delightful paragraphs on White by Lowell in "Under my Study Windows," pp. 1 and 2.)

We have seen the delight these men took, each in his own neighbourhood, and we have compared their style. Now, as members of field clubs, let us look at their entries in their rough diaries, and then educate ourselves by keeping similar note books.

And let us compare the sort of observation bestowed by each both in notes and finished writing.

"The chiff chaff," says White, "utters two sharp, piercing notes, so loud in hollow woods as to occasion an echo, and is usually first heard about March 20." "The Whitethroat," says Jefferies, "feeds on the brink of the ditch, perching on fallen sticks or small bushes; there is then no appearance of a crest; afterwards he flies up to the topmost twig of the bush, or on a sapling tree, and immediately he begins to sing, and the feathers on the top of his head are all ruffled up, as if brushed the wrong way."

"Ivy berries," says White, "form a noble and providential supply for birds in winter and spring; for the first severe frost freezes and spoils all the lawns by the middle of November. Ivy berries do not seem to freeze." "Berries on wild ivy, on birch tree, round and fully formed and plentiful; berries not formed on garden ivy," runs a note by Jefferies, again: "ivy, brown reddish leaves and pale green ribs." While living at Surbiton he saw "street mist, London, not fog, but on clear day comes up about two-thirds the height of the houses." And White, fifty miles from London, observed the same thing nearly one hundred years before Jefferies: "This is a blue mist which has somewhat the smell of coal smoke, and, as it always comes to us with a N.E. wind, is supposed to come from London. It has a strong smell, and is supposed to occasion blights. When such mists appear they are usually followed by dry weather." We have ourselves seen this mist driven, on a bright May-day, over Colnbrook, twenty-five miles from London. It looked like an impenetrable wall coming nearer and nearer, far above the height mentioned by Jefferies, and gradually blotting out the whole world till it lapped the very sunshine at our feet. As White says, it has a strong odour, but it is not blue, except perhaps when seen from a great distance. It is murky brown. One doubts whether White had much sense of colour. He rarely mentions it. He tried once to write a poem on wintry scenery, and failed to do in verse what Jefferies effected in prose (see the bit about January, quoted by Besant in his "Eulogy," p. 246). Instead of the blazing dandelion and emerald moss, which fascinated Jefferies, White did not get beyond the old-fashioned painter's conventional yellow-and-brown trees.

Thoreau, amidst infinitely more striking surroundings than those of White, could not fail to be impressed by colour. He chronicles the gorgeous red-and-yellow of the splendid American maple in a passage which seems to illustrate Lowell's criticism, viz., that Thoreau is incapable of sustained thought and style.

"A large red-maple swamp, when at the height of its change, is the most obviously brilliant of all tangible things, where I dwell, so abundant is this tree with us. It varies much both in form and colour. A great many are merely yellow, more scarlet, others scarlet deepening into crimson, more red and common."

"Look at yonder swamp of maples mixed with pines, at the base of a pine-clad hill, a quarter of a mile off, so that you get

the full effect of the bright colours, without detecting the imperfections of the leaves, and see their yellow, scarlet and crimson fires, of all tints, mingled and contrasted with the green. Some maples are yet green, only yellow or crimson tipped on the edges of their flakes, like the edges of a hazel-nut bur; some are wholly brilliant scarlet, raying out regularly and finely every way, bilaterally, like the veins of a leaf; others, of more irregular form, when I turn my head slightly, emptying out some of its earthiness and concealing the trunk of the tree, seem to rest heavily flake on flake, like yellow and scarlet clouds, wreath upon wreath, or like snowdrifts driving through the air, stratified by the wind. It adds greatly to the beauty of such a swamp at this season, that, even though there may be no other trees interspersed, it is not seen as a simple mass of colour, but, different trees being of different colours and hues, the outline of each crescent tree-top is distinct, and where one laps on to another. Yet a painter would hardly venture to make them thus distinct a quarter of a mile off."

The above is a mosaic composed of good fragments, but still fragments only, and to a certain extent repetitions of each other, and ungrammatically strung together; while the frequent repetitions which occur in much of Jefferies' finest writing are like the refrain of a song. They are all part of a harmony. Read "The Pageant of Summer" ("Life of the Fields," Chatto and Windus). Where the Ode to Immortality ranks in poetry—there the Pageant ranks in prose. Such is the opinion of Besant. But let us return to White and his "russet woodlands." He notes the shapes and sizes of oaks, but never their colour. Compare Jefferies' rough note on these trees in November. "Oaks still in full leaf, some light brown, still trace of green, some brown, some buff and tawny almost, save in background, toned by shadow, a trace of red." The oak tree does not usually strike one by its autumn foliage. Yet Jefferies notes four shades of brown, or six, if you include those modified by green, red, and shadow colour. Such notes as these are not merely of artistic value. They sometimes—perhaps always—are capable of a scientific bearing. For instance, Jefferies himself says, in one of his magazine articles: "You may tell how much moisture there is in the air in a given place by the colours of the autumn leaves; the horse chestnut, scarlet near a stream, is merely yellowish in drier soils." (Scarlet and pink may denote a change of light into heat, which occurs where damp and cold threaten to chill vegetable tissues, as on the night-exposed sides of daisy and hawkweed petals.) But obviously the more free our observer is from any theory he wishes to prove, the more valuable his notes become. See the delightful preface Jefferies has written to the Natural History of Selborne. White, when he walked out, "was not full of evolution," &c. (p. ix.), and he made his notes for their own sake. With Jefferies himself, however, living at a later age amid the Darwinian stir, question

and speculation went hand in hand with simple observation.* For instance, he one day traced two tiny earthworks with the point of his walking stick across an ant trail. "The work of the nest was stopped and thousands upon thousands of factory hands were thrown out of employment." They searched right and left for the lost trail, but not a single ant went straight forward over the earthworks. Yet the barrier was only about three times the height of their bodies. This caused Jefferies to conclude that "unless in a well-worn groove, a single ant appears incapable of running in a straight line." Then at once he proceeds to speculate why and wherefore. "These ants that acted so foolishly to appearance may have been influenced by some former experience of which we know nothing; there may be something in the past history of the ants which may lead them to profoundly suspect interference with their path as indicative of extreme danger. Once perhaps, many ant generations ago, there was some creature which acted thus in order to destroy them." Compare the facts which interested White when *he* watched ants—the hurry and confusion round ant-hills in August, previous to emigration —the myriad swarms in the air—the wealth of food for swallows. All this interested him for its own sake, apart from any theory. Similarly he made careful notes of the dates when flowers first blossom without troubling himself why some come so early as to be invariably nipped. Jefferies, on the contrary, suggests that the apricot "probably opens at the time nearest to that which, in its own country, brings forth the insects that frequent it;" while, as regards the woodbine leaf, "always the first to come" in January, "and never learning that it is too soon" he thinks it must originally have been of foreign introduction, and that it "still imagines itself ten degrees further south, so some time seems necessary to teach a plant the almanack." Thus habit in the plant is accounted for on the same lines as instinct in the animal.

Thoreau also noted dates. Emerson tells how "it was a pleasure and privilege to walk with him. He knew the country like a fox or a bird, and passed through it freely by paths of his own . . . On this day he looked for the Menyanthes and detected it across the wide pool; and, on examination of the floret, declared it had been in flower five days. He drew out of his breast pocket a diary, and read the names of all the plants

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* It must not be inferred that White *never* ventured on a theory—as, for instance, in relation to the migration of birds. But as a rule the moral of his writing is utilitarian, not speculative. "The study of grasses would be of great consequence to a northerly and grazing kingdom. The botanist who would improve the sward of the district where he lived would be an useful member of society: to raise a thick turf on a naked soil would be worth volumes of systematic knowledge, and he would be the best commonwealth's man that could occasion the growth of two blades of grass where one had been before." And the thirty-fifth letter anticipates the whole of Darwin's fat volume on earthworms, by pointing out the benefits worms confer to soil.

that should bloom that day, whereof he kept account as a banker does when his notes fall due: 'The Cypripedium not due till to-morrow.' He thought that, if waked up from a trance in this swamp, he could tell by the plants what time of year it was within two days."

But to return to Jefferies and his ants. He asks why their crowded life does not breed disease. "Have they begun where human civilisation may be said to have ended, with a diligent study of parasitic life?" He reflects how extraordinary it is that in spite of manifold risks, every ant may calculate on a certain average duration of life; "they have fitted themselves into life and reached a species of millennium." He argues, from the powerful bite which an ant can inflict, that it could easily nip off the hairs supposed to protect plants from insect invasions. Hence ants, far from being kept out of such plants, must purposely avoid them. Then he supports the theory that the parasite of the consumptive has to do with the flora. Perhaps ants are healthy because they avoid the mites of disease, contained along with honey in certain flowers. Has formic acid, which is the ant acid, ever been used for experiment on the bacilli of lung disease? Perhaps the strong odour of formic acid is repellent to parasites ("Field and Hedegrow," pp. 207-8), and so on and on, in wandering mazes lost. But, like Thoreau, he is impatient of received theories: "Evolution is a very old dog—let sleeping dogs lie." And Thoreau in a rather foolish paragraph pokes fun at Darwin, "who hibernates in science." Both men are as impatient of dogma in science as they are of it in religion—Impatience mars—

> "So let the change which comes be free
> To ingroove itself with that which flies
> And work a joint of state, that plies
> Its office moved with sympathy."

PET RABBITS.

YEARS ago I bought some white rabbits, most lovely little creatures. All speedily died save one. The solitary survivor soon showed such lively affection and intelligence that I used to bring him into the house, and there he really lived latterly. He made himself perfectly at home. He used to scamper up and down stairs, greatly enjoying himself, indeed at last he refused to be turned out of doors. He grew to a large size and used to delight in sitting half way down the principal staircase of my house awaiting my return. Callers were often astonished to see the huge creature comfortably seated upon the stairs. He followed me up and down stairs like a dog. His great delight was to sit in the evening on the sofa or to nestle before the fire.

He showed wonderful sharpness. He knew the maid's step coming to put him to bed, and he would run away and hide, and then, when she found him, he kicked her with right good will. I had a very determined tabby who seemed interested in Jack Bunsby. Generally she and he were very good friends, but sometimes she used to jump on him, and seize him by the ears. At first I was afraid she would hurt him, perhaps even kill him, but as he did not seem injured and was not much frightened I took matters more philosophically, and I cannot remember that he ever seemed the worse for her rather rough play. At last, one bitter March, to my great regret, he died of a cold. I found him one day sitting huddled up in the garden in the snow. He had got a chill to which rabbits are very subject. I took him in, put him in a warm box, but in vain, and as I have said above, he died.

The Rev. Thomas Perkins, of Turnworth Rectory, Blandford, is the proud owner of a large white rabbit named Peter. He is not so intelligent and affectionate as was my Jack Bunsby, but Peter Perkins is a dear fellow, quite one of the family, coming to be petted and showing a great deal of character. Like my rabbit he delights in the drawing-room. He knows his own quarters, finds his way there, and delights in being at liberty. He enjoys his food, and I fancy makes free with his kind master's garden. So far he has escaped the common fate of pets, and has not been hurt. But Turnworth is not much frequented by dogs and boys.

The Rev. T. Perkins has favoured me with a few notes relating to his much beloved rabbit :—

"As you have taken in hand to write an account of the sainted Bunny, I will send a few notes for your use. He was born in 1897, and when several months old he was allowed one Sunday afternoon to have a run in the garden. There he saw Patrick, my well-beloved monster cat, and went up to examine him, and was particularly interested in the great length of Patrick's caudal appendage, so much longer than his mother's, the only tail he had as yet seen. He now passes much of his time indoors, coming in to breakfast: Patrick makes a great fuss with him, licks him, rubs his head against him, and the Bunny often returns the compliment, licking the cat all over. They lie for hours together on the hearthrug: the rabbit runs upstairs and explores the bedroom: he runs after Mrs. Perkins, pulls her skirts if he wants anything, gets very excited if she goes to the cupboard, where the biscuits and cake are kept, sits up and begs for food at meals, and if kept too long waiting, bangs with his hind legs. The other day he wanted to go out, found the door shut, so came to Mrs. Perkins and pulled her by the skirts to drag her to the door. He laps milk out of the cats' saucer, sometimes simultaneously with them. The other day, when some cakes and biscuits were brought for five o'clock tea into the drawing-room he examined the stand thoroughly, and

then stole a cracknel from the cake basket, which we then put up out of his reach on a higher tier of the stand; but he was not to be defeated, so he got on a chair and stole a fairy cake. His intelligence is rapidly increasing, and it is interesting to see how the natural instinct of dogs and cats to kill rabbits has been overcome in the case of our animals by the feeling that the rabbit is one of the same family with themselves. Mrs. Perkins is Peter's great favourite, he never comes to me for anything he wants if she is about, though I feed him and am attentive to him. Please denounce the cruel custom of picking up a rabbit by the ears. Peter objects much to this. I take him up just as I pick up the cats, by their two arms."

P.S.—Pressure on space has kept this article over nine months, and to-day, November 6, the proof has reached me. This allows me to add a few lines. Peter Perkins, all through the spring and summer, grew in weight, and a month ago he was a noble-looking creature — master of the rectory and lord of the parish. In July there was a fearful scare. Mr. and Mrs. Perkins were away from home, and one day Peter was missed. Family, servants and neighbours scoured the district—Peter was gone! The agitation of Miss Margaret Reed, Mr. Perkins's niece, in whose charge he had been left, was painful. Next afternoon, at four o'clock, Peter was seen returning. He got through the hedge and was quite ready for food and caresses. Friday, October 20, Mr. Perkins cycled over to see me. I saw that he was painfully agitated. Poor Peter had died after a short illness, and no cause could be given for it. He had been well, hearty and lively up to a few hours before his death. He died peacefully, and it was hoped painlessly, his head resting on the arm of his mistress, the only consolation being that he died at home.

Wimborne. (Dr.) A. J. H. Crespi.

THE YEAR ROUND.

THREE score and ten times may men live through the circle of Nature's year without catching a note of dree monotony. Each season ever fresh, ever endowed with fair enchanting powers. Poets in all ages sing new songs of the year's sweet charms, yet no one of them ever sounds the final chord of its infinite music. In Spring they may tell of Winter waking from her sleep; of how the snowdrops burst upon us like a saintly army; how they stand with tiny grey-green sword blades, resting shoulder-high, and how palely, yet with modest pride they stand, strong in victory, having fought a mighty battle with the hard coldness of the earth. Yet this speaking is but a tiny note of Spring's charm, whose deepest

note is struck in the blossoming time, when we see Autumn, in sweet youth, bowing beneath her bridal veil.

A poet, when singing of Winter's beauty, surely unduly suppresses Spring's sweetness when he speaks of her as "a fickle mistress, who does not know her own mind, or is so long in making it up, whether you shall have her or not, that one gets tired at last of her pretty sniffs and reconciliations. You go to her to be cheered up a bit, and, ten to one, catch her in the sulks, expecting you to find good humour for both." Surely libellous words! One cannot so easily suppress her balmy airs. Even the grey old churchyards forget their solemnity in smiles. Crowds of golden daffodils dance, full of living, breathing life. O'er the graves of the breathless dead they laugh in face of the grim old fir-trees, who stand by, looking down upon the winsome ways of such a youthful throng.

Summer is a simple joy in being, a silent pause. Nature's music has reached the highest strain. The musician's hand raised high from off the keys, ponders, that we may dwell awhile in the silent fulness. 'Tis golden, golden everywhere, glowing, glowing all the day. We bask. All things bask. And from the earth comes the murmur of myriads of tiny heart-beats—that song of abundant life. If "music is charming because it touches the intangible," surely the long pause of Summer silence is enchanting, because it sounds the silent music of musical tumult at rest. Such joy there is in each day's breathing of life. Not only in the earth beneath do we feel the life unseen, but the very air vibrates with the rippling rapturous laughter of myriads of invisible spirits. To every human being it is the moment of intensest intimacy with Nature. When looking upon her countenance with the eyes of love, one looks not only upon the outward face and form, but deep deep, down into the soul of her. Summer is the passion-strained moment of our Nature love. A time when we never tire tracing every line of beauty in the beloved's face, each evanescent curve now visible in light, now lost in gloom—the blue gloom of sunshine's shadows. The flower-strewn earth is aglow with colour, glowing in responsive shining to the warm touch of sunlight.

It is almost imperceptibly we glide into the minor key of Autumn—"grey Autumn," generous Autumn, with arms all full with rich rare gifts, gifts of fruit, gifts of colour, generous in daily lengthening shadows, cooling rains, soft low winds, which play the oft-recurring accompanying note throughout the season of parting. Rosy apples glow upon the branches: leaves are dipped in sunset dyes: sunflowers bow their heads in farewell to the sunlight. "Good-bye," "good-bye" is echoed from flower to flower, from leaf to leaf. Ripened cornfields bend before the breathing of the wind, as she whispers in passing her last "farewell." Here and everywhere "Summer smiles through parting tears."

And Winter sleeps. All the thoughts of the year lie in secret.

Everywhere is a mystery of the fulness of knowledge. There is power in the note of Winter's theme. All the suggestions of the year are stored. There is reverence in presence of the white-haired old age of the year. All talkative things are hushed. Snows fall in gentleness, and then hang from our house-eaves like "dumb waves caught in the act of breaking." There is everywhere that intelligent dumbness which is the quietness of power, a power which holds within the essence of things to be, the knowledge of things that have been.

EMILY BURTON.

Sandhurst, Arnside, via Carnforth.

THE FAIR PERSIAN.

O far as my experience goes, I can fully endorse the remark made by Gordon Stables in his excellent little book on Cats. Speaking of the Persian variety, he says in effect that the tabbies are the largest and fiercest of the domesticated animals, inveterate poachers, and generally intractable, the black coming a good second as to size and strength, with an independence of character peculiarly their own and affectionate in a moderate degree, and the white being the smallest and most docile of the trio, and intensely loving and playful. One of the latter kind is now in residence with us, and possesses these qualities in an eminent degree, to which is superadded extraordinary intelligence, for a cat. Her gentleness is very noticeable when romping with mice, the enjoyment, it is only fair to say, being one-sided, the little animals having ample time to squeal, also to run away. She loves a game, but the garden is neglected though plentifully stocked with birds, kittens and trees, the cats possessing great attraction at all seasons. She has an uncanny habit of striking ferocious attitudes in the doorway with the evident intention of startling the unthinking occupant of the room, also of making sudden rushes from unexpected quarters with the same idea, and will deliberately push things off the table looking steadily into the forbidding countenance meanwhile; indeed, a strong vein of humour runs through all her actions. Her love of water, though not an uncommon trait in cats, is absorbing; hours being spent at the scullery taps and basins, and her tail allowed to trail in the latter and afterwards surveyed with great complacency; a bath is considered necessary for herself as for others; indeed, she has been rescued more than once from a warm watery grave. Lavatory ablutions are watched with great interest, and probably imitation was the origin of the very amusing habit of sitting in the basin, catching the drops from a leaking tap with her paw and washing herself. Some melted soap was once used, but the experiment was not repeated. These little ways we consider unique and de-

serving of being chronicled. She allows herself to be nursed in any position like a doll, especially by children, to whom she displays great fussiness, though generally unaccustomed to them, and insists on kissing in a very unmistakable manner any of her friends she particularly favours. Muff is the six-months-old kitten of a very petted and carefully tended mother, and, should her offspring eventually have the same advantages, there is no doubt but that they will rival in intelligence and devotion any member of the canine tribe.

ANNIE HANCOCK MEADOWCROFT.

The Hillock, Court Oak Road,
Harborne, Birmingham.

REVIEWS AND EXCHANGES.

Our Rarer British Breeding Birds: their Nests, Eggs, and Summer Haunts. By Richard Kearton, F.Z.S. Illustrated from photographs by C. Kearton. Cassell & Co. Price 7s. 6d.

THE excellent work of the Messrs. Kearton needs no introduction now, and those who were present at our last annual meeting will be glad to have another volume illustrated with their beautiful photographs of birds in their native haunts. The present volume contains only some 150 pages, but no less than seventy of these are whole-page illustrations; and as these comprise nearly sixty species not represented in "British Birds' Nests," by the same author and artist, they go far to complete the list. The highly-surfaced paper upon which these delicate half-toned plates are printed makes us unable to reproduce any of them with justice in NATURE NOTES, but we can assure any bird-lover that he will be glad to have added this volume to his library.

The Trail of the Sandhill Stag, and sixty drawings. By Ernest Seton-Thompson. David Nutt. Price 3s. 6d. nett.

When, about a year ago, we read "Wild Animals I have Known," we came to the conclusion that in Mr. Seton-Thompson Manitoba possesses a Richard Jefferies, with the additional gift of a pencil as facile, true to nature and charming as is his pen. The present work contains only one short story, but it is as fascinating as any in the previous volume. In subject it forms an American *pendant* to the Hon. Mr. Fortescue's "Story of the Red Deer," and it is difficult to imagine anyone who has read these two beautiful books appreciatively ever again taking part in stag-hunting. We are shown how a young hunter learns to realise the nature of his "vile success--a beautiful, glorious, living creature tortured into a loathsome mass of carrion," until, in his final apostrophe to the noble buck, he says, "Go now, without fear, to range the piney hills; never more shall I follow your trail with the wild wolf rampant in my heart. Less and less as I grow do I see in your race mere flying marks or butcher-meat." Once or twice it occurs to us that Mr. Seton-Thompson seems to strive after a preciosity of style which we like less than his simpler narrative; but this is, perhaps, the almost inevitable result of the attempt to clothe so slight a story of a hunt with sympathetic sentiment.

Journals and Papers of Chauncy Maples, D.D., F.R.G.S., late Bishop of Likoma, Lake Nyasa, Africa. Edited by Ellen Maples. Longmans, Green & Co. Price 6s. 6d.

Those who read with pleasure the "Life and Letters" of the late Bishop Maples, will be glad of this collection of his journals and papers on his work in Africa. From our point of view the most interesting are "Papers from Newala," reprinted from "Central Africa," which contains a good account of the mammals and birds, and the paper on the centre of his own diocese, "Likoma: an Island

in Lake Nyasa," reprinted from the journals of the Manchester and Scottish Geographical Societies, which describes its geology, flora and fauna. The work is illustrated by an excellent portrait and a map of Eastern Central Africa, and has a serviceable index. The zoological references have been checked by competent hands, but "Possibly *Acanthaceæ Barleria*" is a queer way of speaking of a plant.

Received.—*Board of Agriculture Leaflets:* No. 57, External Parasites of Poultry; No. 58, Internal Parasites of Poultry; *The Victorian Naturalist*, for October and November, 1899; *Science-Gossip*, *Animal World*, *The Animals' Friend*, *Our Animal Friends*, *Humanity*, *The Naturalist*, *The Irish Naturalist*, and *The Agricultural Economist*, for December, 1899; and *The Sixth Annual Report of the Hastings and St. Leonards Natural History Society.*

NATURAL HISTORY NOTES AND QUERIES.

Field Mice and Eggs.—I am able to a certain extent to answer a question of mine in a previous number about the egg-stealing propensities of field mice. The tastes of the Muridæ are many and various: they are all more or less carnivorous, and cannibalistic too. A gamekeeper near here tells me the long-tailed field mouse often robs "oven" nests, *i.e.*, those of such birds as the chiff-chaff and willow-wren.

Market Weston, Thetford, October, 1899. EDMUND THOMAS DAUBENY.

Starlings.—Mr. Tuck's note on starlings taking possession of the nesting-hole of the green woodpecker is of much interest to me, as I have found they do the same thing here by various hole-breeding birds, such as titmice and pied fly-catchers. The latter beautiful little bird in particular suffers a good deal from this cause. On April 27 last I was sorry to notice that a certain woodland haunt of the flycatcher where a few years back it brooded in some numbers, was literally possessed by starlings, that flew about the ancient trees, sang their comic phrases, squabbled, and chased each other for nest materials. The starling can imitate the alarm cry of the pied flycatcher exactly. I have heard it do so close to the hole which it had turned the little bird from, thus adding to the part of robber that of mocker.

I should like to say that goldfinches are reported to have diminished in the districts north of Lakes Windermere and Esthwaite. In a residence of eleven years I have never seen one, yet old inhabitants profess they were fairly numerous, and that bird-catchers came to particular fields to snare them. Nor is the land in greater cultivation than it was.

MARY L. ARMITT.

Goldfinches and Kingfishers.—As far as my observation goes there is no danger of the goldfinch, or indeed any other finch, being exterminated hereabouts, owing, amongst other causes, to the protection of game. An estate that preserves partridges and pheasants preserves almost all other birds, especially during nesting time. I see goldfinches frequently, both singly and in flocks, and they breed in the trees on the lawn. I fancy they must often escape notice, as it is not everybody who can recognise them, unless quite close, and when their cry is known; and many so-called observers have very feeble eyes and ears, as I can testify. Not long ago a friend was making enquiries about hawfinches of a neighbour who imagined he knew something about birds, and was told that they were rarely, if ever, to be seen in these parts. And yet I set eyes on them a hundred times a year: they are frequently to be noticed in the trees round that neighbour's house, and I feel almost sure, nest there.

Kingfishers have a long lease yet. Here, like kestrels and owls, the law protects them all the year round. They turn up in odd places nearly all over this locality. In this village there are some twenty "pits," *i.e.*, small deep ponds that were made in excavating clay to put on the land, a practice that has fallen into disuse. Kingfishers traffic backwards and forwards to these ponds even in

the middle of the village, which is away from a stream and 150 feet above the level of the sea.

Market Weston, Thetford, EDMUND THOS. DAUBENY.
December, 1899.

Stuffed Birds.—It is well known that stuffed birds deteriorate if exposed to a strong light. I have lately come across an extreme instance of this. In a case that had been hung up for many years in a verandah upon which the direct rays of the sun fell, were a number of stuffed birds that looked like ghosts. They were of a weird, ashy colour more or less, with their beautiful markings almost entirely gone. The warm brown tint of a wren had turned to grey, and the yellowish green of a woodpecker too; even the greater portion of the red on the back of its head had vanished, while the pencillings of a wryneck had followed suit. In short, if this case were to fall into the hands of a sharper, he might palm off some of its contents on the uninitiated as curious varieties.

December, 1899. EDMUND THOS. DAUBENY.

Kestrels and Sparrows.—In a church which I can see from my dining-room windows a pair of kestrels nest every year. Last spring, in consequence of their unwelcome attentions to young pheasants, a man was sent to take their eggs, when a sparrow's nest full of young birds was found within a few inches of where the kestrel was sitting. Both hawks and sparrows entered their nests by the same hole in the wall of the church.

December, 1899. EDMUND THOS. DAUBENY.

The Bullfinch.—Noticing another allusion to the bullfinch and its habits and capabilities for mischief, I thought perhaps you would allow me to speak of one which has been with me about twenty-one months. It was given to me when just able to feed itself, having been reared from the nest. It was thought to be a cock bird, which belief it fostered by singing like one when older. It did not moult the first year, but is now in full female plumage. We were soon friendly, she taking hemp seed from my hand. But I wish to make mention of her great appetite and power for mischief. She is a great feeder, eating about four times the quantity of seed that a canary does. Moreover, she is a great devourer of groundsel blossoms and foliage, an eagerness for which induces me to search a large garden for a supply, so much so that last winter I denuded the garden and orchard of the plant, and it seemed as if I should have to leave one plant, or sow seed to avoid going out to seek for the weed. I reckoned that by keeping her a prisoner I did double service by preventing her devouring the fruit buds, and also, so to speak, compelling myself to weed the garden of a troublesome plant. I do not infer from her behaviour that she would prefer groundsel to pear-tree blossoms, for on giving her some of the latter she quickly ripped them up.

Boreham House, Elstree. H. J. B.
December 9, 1899.

Instinct in Birds.—Another example of the wonderful instinct of birds, and their keen powers of sight, came to my notice to-day. Two American blue birds, which we have had at least ten years, were in their cages in the house; when, suddenly uttering their alarm note, and fluttering about, they remained transfixed to their perches. On going to the window we saw a kestrel flying overhead. Some months ago the same thing happened. One blue bird who was enjoying his "outing" suddenly dashed down through the harmonium bellows! We saw that a kestrel had stooped just outside the window, carrying off a sparrow. A gentleman living here has noticed the same alarm in a canary when a hawk passed the house. This is more remarkable, as a canary is a thoroughly domesticated bird. Jackdaws or other birds passing the windows cause no distress.

Glenthorne, Eastbourne. E. G. WOODD.

Humming-bird Hawk-Moth (*Macroglossa stellatarum*).—A. M. G.'s interesting account of this moth in the October number of NATURE NOTES induces me to write of a curious circumstance which occurred to-day (November 10). A fine active specimen was seen flying about in the sunshine of a south bed-room the first thing in the morning, and before the windows had been

opened. It must have gone in there for shelter during the recent wet and stormy weather. There were no flowers in the room, but it hovered in front of a framed piece of old-fashioned embroidery representing honeysuckle, cocks-combs, sweet peas, &c., in natural colours; then off it went with the rapid flight peculiar to these moths to a coloured calendar representing pansies; a bright crimson plush frame next attracted it. This, I think, proves that colour quite as much as scent guides them in their choice of flowers. It seemed a very tantalising deception to a hungry moth, and it is to be hoped it found a breakfast in our sunny garden when let out of the window, as a few summer flowers still linger there.

On another occasion I observed a green caterpillar on some artificial leaves in a grate, doubtless, like the moth, attracted to them by their natural appearance.

Teignmouth, Devon. C. E. FARLEY.

Dor-beetles.—A doctor near here, when bicycling in the evening, has been struck in the face by a dor-beetle (*Geotrupes stercorarius*). This caused considerable pain at the time; his face became much swollen, and one of his eyes closed up. The inflammation lasted for two or three days. No doubt the beetle, which feeds on dung, had been living in some fœtid matter which poisoned the doctor's face.

Market Weston, Thetford. EDMUND THOS. DAUBENY.
October, 1899.

SELBORNE SOCIETY NOTICES.

Selborne Winter Lectures.—The next lecture will be given by the Editor of the Society's magazine, Professor G. S. Boulger, F.L.S., F.G.S., at the rooms of the Linnean Society, Burlington House, W., on Tuesday, January 16, at 8.30 p.m. The subject will be "Man's First Contact with Nature." Admission, 1s., or on application to the Secretary beforehand, 6d.; reserved seats, 2s.

Selborne Saturday Afternoons:—

Saturday, January 13, 1900.—Natural History Museum: Birds: 2 to 4 p.m. Meet Mrs. Myles in the Central Hall at 2 p.m. *sharp*. Guide, Dr. Bowdler Sharpe, F.R.S.

Council Meetings.—The next Council meetings will be held on January 2 and 16 at 5.30 p.m.

Thames Preservation League.—At a meeting of the Thames Preservation League on Tuesday, December 5, Professor G. S. Boulger and Mr. Geo. H. Edwards were elected to represent the Council of the Selborne Society on the Council of the League.

Selborne Field Club.—The Annual Report of the Field Club was read and adopted at a meeting held after the Council meeting on Tuesday, December 19. Mr. Ernest A. Nash tendered his resignation of the Honorary Secretaryship, and a vote of thanks was passed for his services.

NEWS FROM THE BRANCHES.

Birmingham.—The Council has heard with great regret of the resignation of Mrs. A. M. Dixon of the Honorary Treasurership of the Birmingham and Midland Branch, owing to ill health. A vote of thanks for her past services on behalf of the Society was given to Mrs. Dixon at the last meeting of the Council, held on December 19. Miss D. C. Sturge, the Honorary Secretary of the Branch, has kindly undertaken to act as Treasurer as well as Secretary, in the future.

Clapton.—At the same meeting a letter was read from Mr. R. Marshman Wattson, announcing his resignation as Honorary Secretary of the Clapton

(Lower Lea Valley) Branch, and that he would be succeeded by Mr. C. E. Allnutt, 29, Sach Road, Upper Clapton. The Council passed a most hearty vote of thanks to Mr. Wattson for his most invaluable services to the Society for so many years, both as member of Council and as Branch Secretary.

Croydon and Norwood.—The movement for the acquisition of Croham Hurst has received great help from local members of the Selborne Society, who have delivered lectures on the subject. The series was commenced by Mr. H. Keatley Moore, B.A., B.Mus., at the Public Hall on October 10. This was followed by a lecture delivered at Moffatt Hall, Thornton Heath, on October 15, by Mr. E. A. Martin, F.G.S., and by Mr. W. Muston Holmes, at Seneca Hall, on November 23. The lantern slides have been prepared by Dr. Hobson, a member of the Society, and other members of the Committee.

Sale.—On November 24 an illustrated lecture was given by Dr. Graham Renshaw in Wesley Schoolroom, Sale, Manchester, on "Animals studied with the Camera." The lecture commenced with a brief account of various deer and antelopes, mention being made of the efforts of the Selborne Society to check the wanton destruction of wild animals. The growth of antlers in the deer family was illustrated by lantern photographs of the wapiti and the mule deer. The vanishing African fauna was illustrated by slides showing the bontebok, the West African harnessed antelope, Selous's antelope, and the black rhinoceros, and attention was called to the article on the extermination of the African fauna which had been published during the year in NATURE NOTES. Several interesting birds were then shown, such as the bateleur eagle, the Cape crowned crane, the Japanese crane often depicted on Japanese screens, and the black-necked stork. The lecture concluded with an account of the transformations of the common magpie moth, which might be studied in every garden in summer time. The objects of the Society were brought prominently before the audience, and the lecture fully illustrated by the lantern.

ANSWERS TO CORRESPONDENTS.

James S. Mann (Plaistow).—The larvæ are probably those of a species of *Pachyrrina*. belonging to the *Tipulidæ*, crane-flies or daddy-long-legs.

E. O. G.—Several correspondents write to recommend "Every Day in the Country," with 400 illustrations, by Harrison Weir. (Warne and Co.)

Julia (West Monkton).—The galls are the common oak-spangle, produced by the puncture of *Neuroterus lenticularis*, Olivier, the sexual form of *Spathegaster baccarum*, L., one of the *Cynipidæ*.

N. C. W.—I am sorry to say that I am unable at present to suggest any remedy.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 122. FEBRUARY, 1900. Vol. XI.

SELBORNIANA.

Our President.—Every member of the Selborne Society will have heard with pleasure that Her Majesty has raised our President to the peerage—an honour the deservedness of which no one will question. At their first meeting after the announcement was made the Council sent a message of cordial congratulation to Sir John.

Death of an Illustrious Selbornian.—To Gilbert White knowledge was valuable for its own sake and Nature was admirable as the adaptation of its Creator. If to John Ruskin beauty of sense was the primary object and intellectual truth and moral goodness secondary, he was none the less in the highest sense Selbornian in the thoroughness, the honesty, and the reverence of his investigation of Nature. Whether he studied the forms of clouds or of snow-clad peaks, the structure of agates or the proportion between leaves and the twigs that bear them, though his object was artistic rather than scientific, Ruskin was a true follower of White, and in the death of the author of "Modern Painters" we have lost a champion of our cause.

Alpine Flowers.—Our attention has been called by the Rev. H. E. A. Bull to the reckless destruction of Alpine flowers by English and other visitors to the Engadine. "In such surroundings," he writes, "everyone must be captivated by the exceeding beauty of the flowers in the high regions, and no one would grudge the picking of some of the blooms; but unfortunately there is with many visitors scarcely any limit to their destructiveness, and the paths about Pontresina are often littered in places with plucked and discarded blooms. A gentleman

staying in the same hotel as myself complained that many rare species had been completely exterminated in the neighbourhood." Mr. Bull suggests that notices in German, French and English should be posted up in the hotels. We would also call attention to the fact that several Swiss cantons have prohibited by law the gathering of certain rare species, and that there exists at Geneva, 2, Chemin Dancet, a garden founded in 1883 by l'Association pour la Protection des Plantes, under the presidency of M. H. Correvon, expressly for the cultivation of species which are in danger of extermination by tourists. Will someone imitate this good example at Pontresina ?

Fresh-killed Sea-birds. — A correspondent writes as follows :—" Will you allow me to call attention to the following advertisement from *The Bazaar* of December 27—

> Clean fresh seabirds, in the flesh, for stuffing. Price list 1d. stamp. Clarke, Naturalist, Scarboro'.

Might not the powerful influence of the Selborne Society be exerted towards inducing editors of such papers as the above to refuse insertion to advertisements of this class? A supply of *fresh* killed sea-birds always ready for customers seems to involve a wholesale slaughter of these beautiful, interesting and perfectly harmless creatures, whose presence is to many one of the principal charms of the seaside. Advertisements, too, dealing with wings of jays, starlings and other bright-plumaged British birds ought surely to be discouraged in every way."

Thoreau and Jefferies.—I regret that the author of the article on " Literature of Field and Hedgerow " should have tried to exalt Jefferies at the expense of Thoreau, for either of these great writers is supreme in his own way, and nothing can be gained by pitting one against the other. The passage, moreover, that is cited from Thoreau is an unimportant and obscure one (his true masterpieces being overlooked), while the " Pageant of Summer," with which we are asked to compare it, is one of the most brilliant things that Jefferies wrote. Again, it is hardly fair to say of Thoreau, "we fear he was no more a genuine naturalist than he was a genuine hermit." He did not pretend to be either a hermit or a naturalist—in the sense imputed. It was not his vocation, like that of Gilbert White, *merely* to record observations of animals and plants. He was not a naturalist but a " poet-naturalist " ; and so too, as a matter of fact, was Jefferies, whose descriptions of nature are as deeply coloured by his own personality as those of Thoreau himself. As far as Field and Hedgerow are concerned, the true contrast appears to me to be between the simple and the complex, between the naturalist, White, on the one hand, and the poet-naturalists, Jefferies and Thoreau, on the other. On the question of thought and style it is impossible here to enter, though scant justice has

been done to Thoreau in the article referred to, where Lowell's ill-natured and often-refuted criticism seems to have been taken for granted throughout.

HENRY S. SALT.

REPORT OF THE FIELD CLUB FOR 1899.

IN presenting their Report for 1899 the Committee of the Field Club are pleased to be able to state that, owing to unexpected assistance from members and friends in the way of arranging and conducting Saturday afternoon rambles, twenty-two walks were successfully carried out during the past season. It will be remembered that in 1898 it was not found possible to arrange for more than alternate weeks, and the Committee were fearful lest such a course would have to be taken again, when this unlooked-for help enabled the Club to start again in the right direction.

The first ramble of the season was conducted by Mr. E. A. Martin, F.G.S., on April 15. Croham Hurst was the destination, and the party of twelve members was increased to sixty by the addition of members of the Croydon Labour Church, the Co-operative Society, and the Croham Hurst Preservation Committee, of which latter Mr. Martin is the Honorary Secretary. Arrived at their goal, the guide gave a short address on the reasons why the Hurst should be retained by the people for their use, and the many beauties of and around the place. The excursion to Greenstead on April 29, under the leadership of Mr. S. Austin, was most enjoyable. The church was the chief object of interest, and Mr. Austin read a paper dealing with its history and method of construction, which was much appreciated. The building is, he told us, quite unique in this country, being the only dated piece of Saxon or pre-Conquest wood-work that remains. On May 6 a large party travelled to Gomshall, well knowing from experience that the treat in store for them would amply repay the fatigue of the journey. Mr. Harrison led the way over a carefully chosen route through that most picturesque part of Surrey. At West Hackhurst, Miss Forster, the Hon. Secretary of the Abinger and Shere branch of the Society, very kindly provided tea for the party.

Professor Boulger, on May 13, conducted from Oxshott to Esher the largest party that attended on any one occasion. Crossing Fair Mile Heath, where a good distant view of the gorge of the Mole was obtained, the fir woods were entered. The young foliage of beech and chestnut above and the blechnum fronds and tufts of the silvery moss (*Leucobryum*) under foot here attracted attention. At Black Pond the brilliant orange aquatic fungus (*Mitrula paludosa*) and the sundew were observed.

Sanderstead was the scene of an interesting ramble on May 20. The route lay past Purley Down to Sanderstead Church, and back to Croham Hurst. Heavy rain at the start, and a consequent "sloshiness" under foot were the only drawbacks to an otherwise delightful walk. Mr. Martin conducted on this occasion. The following week saw Dr. Willson conducting, when a most lovely walk was taken from Weybridge *viâ* St. George's Hills and Fox Warren to the Manor House, Byfleet. Many objects of natural interest were noted, and the extensive views from the hills were much admired; while a comparison with South African scenery and vegetation by returned travellers among the party was found very instructive. The route back was along the banks of the Wey.

A part of the extensive forest of Epping was the locality chosen by Mr. C. Nicholson for his ramble on June 10. North Weald was the meeting-place, and after passing through Ongar Park Wood some magnificent views were obtained of southern Essex. The course taken was viâ Mount End and Theydon Bois to Baldwin's Hill. June 17 was the occasion of a visit, under the guidance of Mr. A. B. Wilkinson, to Merstham Church. Thence, after seeing the railway cuttings on the new line to Redhill, another church, Chaldon, was reached by way of the pretty little heath at Allerstead. Here the curious old frescoes were inspected, after which the walk was resumed to Coulsdon Common. The fields and banks were particularly gay with flowers, while some very fine specimens of the Bee Orchis were found in Chaldon Valley.

A most enjoyable afternoon was spent on July 1, when Dr. Willson again took charge of a large party. Starting from Weybridge Station, a move was made to Caneswood, where Dr. Lionel Beale, F.R.S., conducted the members over his unique gardens, very kindly pointing out and explaining to them many interesting species of ferns and sub-tropical plants. The route thence lay through woods and a riverside path to New Haw Lock, and the return journey was by the banks of the Wey. Kew Gardens was visited on July 8, and Professor Hulme, F.L.S., conducted the party through the various houses and over the gardens. A very pleasant excursion was that from Uxbridge to Denham along the Canal. Mrs. Percy Myles was leader on this occasion, and many interesting objects—botanical and entomological—were noticed.

Roydon, a small Essex village, and the ruins of Nether Hall, were visited on August 12, and the excellent report of Mr. W. B. Gerish, who conducted, is subjoined in its entirety:—

"Leaving Rye House Station and passing the slight remains of the historic Rye House, the scene of an entirely fabulous Plot, which needs not the labours of a Gerard to demolish, the church of Stanstead Abbots was reached. This has been recently renovated in a truly antiquarian spirit, none of the ancient features worthy of preservation having been 'restored

away.' It was one of the Saxon edifices which were built east and west of the Lea Valley in the reign of Edward the Confessor. It contains two brasses, a fine monument to Sir Edward Baesh, Queen Elizabeth's Victualler to the Navy, and some fragments of old stained glass. Originally of very small dimensions, it has been twice or thrice enlarged (lengthened and widened) and a tower added. Proceeding through the fields to Roydon, a very fine cedar, standing in the centre of a field, was noticed. The Church at Roydon has little architectural merit, being a typical Essex church, though delightfully situated. Its chief features of interest are three brasses, a 13th century font, and many fine hatchments in unusually good preservation. Tea was obtained at the 'Temple' Inn (Roydon was a possession of the Knights Templars, hence the sign), and afterwards a walk down a steep hill brought the members to Nether Hall, a fine specimen of early Tudor brickwork. It was noticed that the west wing of this noble gateway was in a very perilous condition, being a mere shell o'ermantled with the destroyer, ivy, and it was felt that some step should be taken without delay to buttress and stay this, as its fall would not only spoil the symmetry of the ruin but possibly endanger the other tower. A pleasant walk across the fields and by the banks of the Stour and Lea brought the party back to the station, and, as Pepys has it, 'so home.'"

Mr. E. A. Martin was not favoured by the clerk of the weather when, on August 19, he gave up his time to accompany the members of the Club for the third time during the season. The starting place was Cheam, and the path followed was through Nonsuch Park. It was one of those blazing days when Nature seems to lie dormant. The ground was parched, the grass dried up and everything *existed* rather than *lived*. Another famous garden, that of G. F. Wilson, Esq., F.R.S., at Wisley, was kindly thrown open by him to our members on August 26. Dr. Wilson, of Weybridge, was the guide, and the lake-borders, rock plants, lilies and grasses excited general admiration. Photographic "snap-shots" taken at the time, and kindly forwarded by Dr. Wilson are alone sufficient to cause regret to those who were unable to be present.

September 2 was unfortunately very wet, but those few members who did essay the walk from Leatherhead to Mickleham *viâ* Norbury Park, under the guidance of Mr. Wilkinson, had no reason to regret their decision. The views obtained *en route* were most striking, but as the greater part of the distance was through an open park not many flowers were met with. It was noticed that the river Mole was quite dry in places, the stream running in time of drought through its underground channels, called "The Swallows."

Mr. E. A. Martin conducted a party on September 16 from Belmont across the Belmont Downs to Banstead. The weather was again unpropitious, and the guide's report might be summed up in the words: "blackberries plentiful; rain more so." A

ramble in the neighbourhood of Bickley was carried out successfully on September 23, Mr. Wilkinson once more coming to our help. Chislehurst Common and the Town Court Woods were visited, and not even the rain which fell towards the end of the day prevented all from agreeing that it was an afternoon well spent.

It will be remarked that five rambles have not been mentioned. Of one of these, that on June 3, no report has been obtainable; the other four have already been briefly noticed in the Magazine. One, however, demands special attention by reason of the exhaustive report which the guide, Mr. A. E. Bradley, has furnished. In this he names, and exactly describes the position of close upon 100 species of plants which were found and examined on the occasion of his ramble to Betchworth and the Buckland Hills. For manifest reasons these are not here mentioned, but the list has been handed to the Honorary Librarian of the Society for safe keeping and can be inspected by any members specially interested.

From this account, all will agree that the past season has been a most successful one. For this, those who arranged and conducted the several excursions are mainly responsible, and the best thanks not only of the Field Club but of the whole Society are due to them. It is much to be desired that these and others will come forward next season. Meanwhile, by supporting the Council of the Society in their new venture of winter monthly lectures and Saturday afternoon visits to indoor places of interest, new friendships will be strengthened, and a closer bond of fellow-feeling formed, which cannot but tend to increase the stability and usefulness of the Society.

HOW SCENERY IS MADE.

II.—Valleys and Gorges.

N the first of this series of articles I considered how the broad, flat, alluvial plains are made, namely, by rivers bringing down sand, gravel, clay, &c., and distributing them over, sometimes, considerable areas. If we follow up the river to its several sources, we find that the valleys get more and more contracted until, if it be a mountainous country, the river appears as a rapid torrent, now rushing along and dashing over huge boulders or falling in cascades.

You can easily understand with what force—especially in rainy seasons—it can detach masses of rock and wear down softer materials, and so makes and continually deepens its own channel.

The numerous river-gorges in Wales, which afford some of our most beautiful scenery, are largely due to the action of rivers; though the origin of the depression, down which the water first began to run, may have had another cause.

Besides in Wales, where the rocks are particularly hard, deep river valleys are seen abundantly elsewhere. Thus there is the beautiful valley of the Wye, south of Ross, those of the streams at Stroud and elsewhere, in Gloucestershire, and of others in Derbyshire, as at Matlock, &c. Though the valleys are now deep and wide, with comparatively small streams at their bottoms, which look too insignificant to have washed away so much material, or to have scooped out their sloping troughs, yet if we give them *time* we may credit them with having done nearly the whole of the work.

As a proof that the river has really done the work, if the *strata* or beds of rocks be examined on opposite sides of the valleys, they will often be found to correspond ; just as when you take a bite out of a sandwich, the layers of bread and meat were once continuous across the gap.

While the river goes on deepening its own channel, we must now give the atmosphere its due ; for rain falling on the sloping sides washes away the soil, which gradually gets carried down to the river and is soon conveyed away, so that the breadth of the trough of a valley, through any district where the rock can be "disintegrated" or decomposed, becomes wider and wider as well as deeper. In Wales, however, the rocks are mostly too hard for this, so that the rivers have precipitous sides, as at Dolgelly, &c.

If the sloping sides be covered with grass, this is some protection against their being washed away ; but the soil below is nevertheless constantly going, as may be seen by the innumerable little "earth-slips," as they may be called, which, when looked at from a distance, appear to be narrow "sheep-walks" or minute little terraces, often joined by oblique ones. Follow them down to the water's edge and they may often there be seen to be breaking away and tumbling into the river.

Rivers thus provide us with various kinds of scenery, according to the nature of the country and of the rocks they pass over.

There is another feature, but it is a local one. If the underlying rock be a limestone, a great deal of the rain passes into the cracks which always occur in such rocks, and by dissolving them, the cracks widen, so that larger quantities of water pass underground forming a channel for itself, and escaping at some lower level. The result, after incalculable ages, is that even a large river may flow for miles underground, passing through enormous caves, these having been formed by blocks falling down, which are then broken up, dissolved, and carried away. As the water continually drips from the roof and evaporates, it leaves a deposit of "carbonate of lime," forming large icicle-like structures called "stalactites," and if it accumulate on the floor it is called "stalagmite." These may be seen plentifully in Derbyshire. Occasionally the roof falls in, leaving a great hole perhaps in the middle of a field. In some such hole a river may suddenly plunge and disappear, to reappear several miles

away, as at the Peak cave of Derbyshire. They are called "swallow-holes." In the island of Malta there is one of these holes, with all the signs of a big river having once run along at the bottom; but there are no large rivers there now, and it must have been made when Malta was joined to Sicily and formed part of the continent.

Another use of a river must be mentioned, and that is in encroaching upon the sea or lake where it enters it; for, meeting with the resistance at its mouth, it deposits the mud brought down, and this accumulating ultimately forms land, so that many a town originally built at the mouth of a large river is now several miles inland. Thus the land has greatly extended where the Rhone runs into the Lake of Geneva. In Egypt, too, we see the same thing on a large scale. Egypt has been truly called "the gift of the Nile." The desert originally extended unbroken from Libya to Palestine, the Nile emptying itself into the Red Sea. From some cause it changed its course—perhaps by "silting" up,—and it then ran, as it does now, northwards. Now, as it began to throw down its mud at the mouth, the river became divided into two channels, and thus formed a triangular piece of land like a Greek Δ, called a "delta." The rivers now repeated the process till the Nile has now seven mouths, being split up, as it were, into seven streams.

One more feature, especially of mountain scenery, is the presence of lakes. These are simply the accumulation of the waters of rivers in large valleys occurring in mountainous regions. As a rule the river enters at one end, fills the valley, and flows out at the other. Such is the origin of Bala lake by the action of the river Dee, and of other lakes in Wales and Cumberland. It is the same in the outer regions of Switzerland, as at Lucerne, Geneva, Constance, &c. The rivers supplying these lakes are mainly derived from the melted ice of the glaciers or consolidated snow of the higher altitudes of the mountains.

OUR WOODS AND FORESTS.

WE take the following extracts from a review of the Report of the Commissioners of Woods and Forests for 1898-99 in the *Daily Chronicle* of December 26:—

"The Crown woodlands, although at present financially of small moment, when compared with the bulk of the property, are yet of great importance for the health and recreation of the people, and as supplying a certain amount of useful timber, as well as customary rights of fuel, grazing, &c. They may also be used with great advantage for other purposes, as will be explained further on. It is, therefore, evident that much time and care must be given to the maintenance of these relics

of our formerly vast English forests. There are no Crown woodlands in Ireland or Scotland, nor indeed in Wales—though there is much Crown waste land in Wales which might profitably be planted.

"It would be well if the area of each separate woodland were given in the report, and also the number of cubic feet of timber and fuel sold, and that used on the estates, as well as their values, which are given now. A fair idea might then be formed of the comparative yield of each woodland area, the detailed receipts and expenditure of which are now separately given. . . . No expenditure for planting can be traced in the accounts for the Windsor Forest, but the total expenditure on plantations elsewhere is £1,400, of which the chief items are £839 for the New Forest, £283 for the Forest of Dean, and £117 in the Isle of Man. The expenditure of £647 on Delamere Forest probably includes some expenditure on plantations, which were much wanted when the writer saw the forest a few years ago; but the amount is not specified. It would be useful if this item were shown for all Crown woodlands.

"Mr. Stafford Howard states that the Staple Edge and Blakeney Hill woods, 1,393 acres in extent, in the Forest of Dean, have been fenced, and that these woods will now be closed in accordance with plans for the gradual reinclosure of the whole 11,000 acres, which the Crown is entitled to keep under enclosure. Mr. Stafford Howard has also addressed the Lords of the Treasury as to the decay of the 'Old Woods' in the New Forest, which he states must inevitably perish and disappear altogether before many years, as their enclosure is prevented by the New Forest Act of 1877, and consequently the young growth cannot be protected against the cattle and ponies which graze in the forest.

"The Select Committee of the House of Commons which sat in 1875 held the opinion:—

"(1) That these fine old woods were natural woods which had grown up unprotected and untended by man in any way, in the open forest.

"(2) That as they had sprung up naturally, so young trees would in due course of nature come up to take the place of those that decayed and fell from time to time, and that all that was necessary in places where this failed to occur was to prevent the mowing down of the fern, where there was any young growth amongst it, and here and there to plant young trees of good size, so as to be out of the reach of animals.

"Twenty-two years have now passed, and there can be no doubt that these opinions were erroneous. The incorrectness of the first assumption is shown by the perusal of old records, and of the second by an inspection of the woods. An Act of Edward IV. provided for the enclosure for seven years of woods after the underwood had been cut, in order to protect the regrowth from being destroyed by deer and cattle, and a statute

of Henry VIII. for the preservation of a certain number of standard trees (oak, ash, beech, and others) after the copse was cut. In the seventh year of Queen Elizabeth a survey was made of all Crown woods south of the Trent, and a long list prepared giving the names, acreage, and condition of woods in the New Forest. This list includes many of the present 'Old Woods.' It is therefore evident from these and other facts quoted by Mr. Stafford Howard that the 'Old Woods' have from early times been protected, and are not in any way 'natural woods.' Secondly, that they cannot possibly regenerate themselves is clear from a careful inspection, for nearly every young plant is devoured by the grazing animals as soon as it appears. Mr. Lascelles, the deputy surveyor, is thoroughly convinced of the decaying state of these 'Old Woods,' and of the greatly increased rate at which they are now dying and falling yearly, and of the total insufficiency of the young growth. To quote Mr. Stafford Howard :—

"'There are many groups of naturally-grown trees in the open forest where young seedlings have had the protection of thorns and brambles long enough from the bite of cattle and ponies to grow into trees, but the difference in their appearance and growth from those which constitute the glory of the old woods is that between trees which have come up here and there singly or in small clumps by chance in the open forest and those which have originally been grown in an enclosure in close ranks at first and under good conditions of soil and mutual shelter; the former are stunted and twisted, picturesque enough in their way, but can never make up for the loss of the latter with their great tall stems and massive branches. Such magnificent woods as these can only be perpetuated by following on the same lines that were adopted when they were first formed.'

"Each Commissioner writes a short report on the estates which are under his special charge, but Mr. Horner makes no remarks about his own woodlands, though the state of Windsor Forest clearly calls for notice, owing to the difficulties caused by the excessive stock of rabbits in keeping up a proper crop of trees, and the over-thinned condition of many of the woods. The restoration of Delamere Forest is also a task requiring all the skill of a good forester, and some remarks on what is being done there would be of public interest."

While on the subject of woodlands it may be well to call the attention of our readers to the recent issue by the Surveyors' Institution of a paper on Forest Management, by Dr. John Nisbet, read on January 15th (*Transactions*, vol. xxxii., part iv.), in which the author describes, with two large plans on the scale of ten chains to the inch, a working plan drawn up by him for Lord Selborne of his lordship's woods round Temple and Blackmoor, just east of Selborne.

TWO HEDGEHOGS AND THEIR WAYS.

"Thorny hedge-hogs, be not seen."

HEDGEHOGS are without doubt curious and interesting animals. Many surprises are in store for the individual who keeps a hog or two. Put them in a garden of which you think you know every corner, and then try and find them. Picture-puzzles are nothing to it. The only way to be certain your hedgepigs are still about, is to go out late in the evening with a lantern: then you will be certain to meet them hunting for beetles, slugs, and snails. If you do not meet them, rest certain food is scarce, and they have "made tracks."

High walls are nothing to a pig, especially if there be a fruit tree to aid in climbing. But it is in the house that hedgehogs are at their best in the matter of surprises and terrors to the timid. We have two, and lately they have done some strange things and caused some commotion. They are supposed to live in the garden, which is surrounded by walls nine feet high, on which are fruit trees. One pig was brought back the other day from a house two gardens off! The other was put in the kitchen, to hunt *Blatta orientalis*, of which they are fond to the extent of gluttony. Next day the servants wanted to remove the hog to his garden home, but the question was where to find him. Cupboards and every conceivable place were routed out without a find. Later in the day, on removing a Dutch oven from a cupboard and lifting the lid, there was the pig wrapped up in a dishcloth, sound asleep. He had opened the lid, carried in the cloth, probably on his spines, and made himself comfortable.

The weird noises a hedgehog makes in the dead of night, when hunting Blatta, are very terrifying if you are ignorant of the cause. My bedroom is over the kitchen, and I often hear the most curious sounds when a pig is on the warpath. A noise as if chairs and tins were being moved; just for all the world like some person about. Several times this has been the only hint that the pigs were not out of doors. The other night I was called down about 11 p.m. to investigate the cause of a "mysterious noise" in the dining-room. Certainly there was a curious jarring grating noise in the room. I located the sound as coming from the sideboard, and on opening one of the cupboards I found a hedgehog with his front paws on a cheese dish, and his snout in the cheese: as he refreshed himself the cover rattled on the edge of the dish. Having got inside, he had lifted the heavy dish-cover. He was at once removed to the garden.

A few evenings later there was a great noise in a cupboard under a staircase. A fox-terrier was called in, in case of rats, but on the door being opened, behold the pig again!

The previous few nights nothing had been seen of either pig, but the patter of little feet on the oil-cloth in a passage had been heard : though every search was made no hedgehog could be found. But on some one entering the dining-room in the dark later on, they "lifted something" with the foot and sent it flying some distance. On turning up the gas this "something" proved to be a hedgehog ; where he had hidden all the evening is only known to himself. Later he was hard at work with the Blatta, as the noise from the kitchen testified, in the dead of night.

To-day he was not to be found, but this evening a great scraping and scratching on a closed cupboard door announced that Mr. Pig was within. I brought him up to my own rooms to have the run of my bathroom and a room I use as a "dark room." He has just with great noise tumbled or rolled down a flight of twelve stairs, and I have brought him up again to the landing where, after coughing and sneezing, he has made off at a quick run for the bathroom. But while one pig has been causing some excitement here, the other has been the means of upsetting the family next door.

It was 2 a.m. this morning, when the young man next door aroused the household with cries that a rat was in his room, that he dare not get out of bed for fear of the rodent, and imploring aid. Aid came ; and there was, not a rat, but our other hedgehog, running about the room. This pig had climbed our wall, got into the next garden, thence into the house and actually up two flights of stairs to the bedroom. Imagine the tableau if the young man had got out of bed in the dark, and put his foot on the hedgehog's spines!

Where they will get next, and what they will do remains to be seen. Having written thus far last night, I must add now that I had a look for the hedgehog this morning. I knew the search would not be difficult because of the few hiding-places up here. I was of course mistaken ; not a sign of the hog anywhere. At last I noticed that the carpet on the upright of the bottom stair was much stretched, and there inside the carpet was the pig. He must have used much force to stretch the carpet between the rods, and even then could not roll up, but lay stretched out. I got him out and put him in the bathroom, but this he did not like, there being too much light and no dark corner ; so I stuffed some paper in an old fish-basket, and he is now asleep in that.

Hedgehogs hate the light and will do all they can to get away from it. They like warmth and will creep inside an oven at night, only to be roasted alive later. Like all animals they want water, and this should always be within their reach.

If you keep hogs for hunting Blatta, let them have a night in, and two or three out ; for, if there be many cockroaches, and the hog is always kept in the kitchen, they will "do for" the pig, death being caused by over-stuffing. In winter the

hedgehog is one of the deep sleepers, and it is best, if you have a good garden, to turn him out to make his own warm and comfortable nest, which with the aid of leaves he will do beneath some thick-set hedge, or at the root of a tree. "There he sleeps, through many an evil day, until the spring, never waking, never eating, but like the bear, burning his own fat."*

CHARLES F. W. T. WILLIAMS, M.A.

HOUSE ANTS.

THE season has reappeared when the ant is again in evidence either in the cupboard or on the garden seat. It may be well then if we now try to learn something about these social insects, though they are a nuisance. We have in all three families of them, and of these it may be said that one of them bites but does not sting, while the other two sting as well as bite. The large smooth reddish wood ant, which forms large mound-nests in woods, represents the family that bites only. The red ants which infest our gardens represent those that both bite and sting, as no doubt many can vouch for from personal experience.

In houses little black, or red, or yellow ants are the common nuisances. None of these can be said to be actually destructive to household effects, but they annoy from the mere fact of their presence and their faculty of "getting into" articles of food, particularly sugar or anything sweet. Having once gained access to a store of this sort the news of the discovery is at once conveyed to the colony, and in an incredibly short time the premises are swarming with these unwelcome visitors.

In habits and life-history these ants are all much alike, and in common with other social insects show us a most complex form of communal life with its division of labour accompanied by diversity of forms of individuals; yet all working together in the most perfect harmony and accord. As is pre-eminently the case in the social species of insects, the female is the predominant sex, and the specimens ordinarily seen in houses are wingless and imperfectly developed females called workers or neuters.

In the colony itself, if it be discovered and opened, will be found numbers of these large wingless females, and at the proper season, limited numbers of winged males and females. During most of the year, however, the colony consists almost exclusively of workers with one or more *perfect* wingless females. In summer the ants swarm and winged males and females are produced, and almost immediately they fly away and pair, after

* "The Natural History of the Year" (p. 223), by J. Arthur Thomson.

which the great bulk of them perish. The males soon cease to exist ; but the females, after they have shed or torn off their own wings (and should they be sufficiently fortunate to return to a nest of their own species), set about the establishment of new colonies and become the future mothers of the community, devoting all their energies to egg-laying. The eggs, which are produced in extraordinary numbers by the usually solitary queen mother, are very minute, oval, whitish objects, and are cared for by the workers, the young larvæ being fed in very much the same way as in colonies of bees, specially the common hive-bee. The so-called "ant eggs," in popular phraseology, are not eggs at all, but the white larvæ and pupæ, and if of females or males, these are much larger than the larvæ or pupæ of workers, and many times larger than the true eggs of the ant.

We have no space here to discuss the various habits of ants, but those who are interested and would like to learn something about their agriculture and cattle, wars and slave-raids, &c., will find ample information in the works of Lubbock, M'Cook, and others.

As a house species the red ant is practically cosmopolitan, so much so that its exact origin is unknown. It may be said, however, to have become thoroughly domesticated, and nesting now habitually in the walls of houses or beneath flooring, is often difficult to eradicate. In fact, unless we can follow the workers back to their point of disappearance and can there locate and reach the colony and destroy it, all other measures will be of only temporary avail. If the colony is located in a wall the inmates of the nest may sometimes be reached by injecting bisulphide of carbon or a little kerosene.

The little black ant is not strictly a house species, though it frequently comes indoors and becomes quite as troublesome as any other ant. Its colonies usually occur under stones near the house and are frequently found in the fields, and will be recognised from the little pyramids of fine grains of soil which surround the entrances. When this ant appears in a house it can often be traced to its outdoor colony, and the destruction of this will prevent further trouble.

Sometimes the common meadow ant will find its way into the house, and, when it does, it is often a more persistent and pestilent house nuisance than the rest of its kind. It manifests a great fondness for sweets, and as it is said that these ants have in a marked degree the ability of communicating with one another ; if an explorer discovers something good in a house, the colony in the meadow are soon on the trail. This ant, however, may be traced to its nest often with little difficulty, and can be rather easily exterminated. Drenching the nests with boiling water is an effective means of abating the nuisance of this ant.

Whenever the nests of any of these ants cannot be located there is no other resource than the temporary expedient of

destroying them whenever they occur in the house. If practicable, the removal of the attracting substance or substances should always be the first step. It is said that it is possible to drive ants away from household supplies by the use of repellents. Camphor, either free or wrapped loosely in paper, placed in the pantry or other situation infested with ants, is said to have given complete satisfaction. The odour of the camphor seems to be very distasteful to ants, and it is asserted that they promptly leave the premises.

The best means of effecting their destruction is to attract them to small bits of sponge moistened with sweetened water and placed where they are most numerous and on their roads. These sponges may be collected several times during the day, and the ants swarming in them destroyed by immersion in hot water. It is said that a mixture of borax and sugar dissolved in boiling water will effect the destruction of ants readily and in numbers. Borax will, we know, kill cockroaches, and is the substance with which milk is drugged in the summer time.

These are all methods of control, but for extermination, success best follows the use of bisulphide of carbon. The method consists in pouring an ounce or two of the bisulphide into a number of holes made in the nest with a stick, promptly closing the holes with the foot. The bisulphide penetrates through the underground tunnels and kills the ants in enormous numbers, and if applied liberally will exterminate the whole colony.

Though the ants found in houses look small and insignificant, yet they have well been termed "wicked ones." To this we attribute the fact that the thrifty housewife is ever ready to listen to methods of extermination, while she takes but a languid interest in their communal habits and social economy. We have, therefore, endeavoured as far as possible, to meet the wishes of the mistress of the store-room and pantry in these few words on the subject of house ants.

R. Hedger Wallace.

WHAT TORTOISE-SHELL IS.

T is perhaps not generally known—certainly not so widely as it ought to be—that the so-called tortoise-shell of commerce, the material from which combs and hairpins, plain and ornamental, are made, besides a multitude of trinkets for pocket, desk, and dressing-table, is obtained at the cost of the systematic torture of the animals from whose bodies it is taken.

The shelling process varies in different countries; but in every case it is cruel. We find it stated on the authority of

many trustworthy observers that in order to remove the shell of their victim the turtle-fishers have recourse to fire. Here, for example, is the account quoted by Darwin in his "Naturalist's Voyage round the World":—

"We saw several turtle, and two boats were then employed in catching them. . . . A man standing ready in the bow dashes through the water upon the turtle's back; then clinging with both hands by the shell of its neck, he is carried away till the animal becomes exhausted and is secured. Captain Moresby informs us that in the Chagos Archipelago, in this same ocean, the natives by a horrible process take the shell from the back of the living turtle. It is covered with burning charcoal, which causes the outer shell to curl upwards: it is then forced off with a knife, and before it becomes cold is flattened between boards."

The wretched animal is not killed, but it is allowed to crawl away or turned back into the sea to re-plate itself, to be put through the torture again as soon as the new growth of the shell-segments (thirteen in all) is mature. Boiling water is also used, but more generally the plates are detached by the application of fire.

A writer in the *Evening Post* (New York), who visited the island El Roncador on a turtle-hunting expedition at the invitation of one who was engaged in the business, gives the following particulars of the cruelty as he saw it:—

"At night the fishers conceal themselves along the shore as well as possible, and when the turtles come up out of the water on the beach they rush forth and turn them over on their backs with iron hooks, leaving them secure in this position until morning. It is the method by which the scales are loosened which is the repulsive part of the business. The turtles are turned over again in their natural position and fastened firmly to the ground by means of pegs; then a bunch of dried leaves or sea-grass is spread evenly over the back of the turtle and set afire. The heat is not great enough to injure the shell, merely causing it to separate at the joints. A large blade, very similar in shape to a chemist's spatula, is then inserted horizontally between the laminæ, which are gently prised from the back. Great care must be taken not to injure the shell by too much heat, and yet it is not forced off until it is fully prepared for separation by a sufficient amount of warmth. The operation, as one may readily imagine, is the extreme of cruelty, and many turtles do not survive it. Most of them do live, however, and thrive, and in time grow a new covering, just as a man will grow a new finger nail in place of one he may lose."

That this horrible cruelty is practised extensively in both the southern and western hemispheres (and, indeed, wherever the hawksbill and logger-head turtles abound) would be almost incredible were it not thus attested. The West Indies and South America, Sydney, and Fiji contribute not a little towards supplying the market demands with this product; but most of

it comes from Ceylon, Bombay, and Zanzibar, from the Mauritius and Seychelles, from Singapore and Macassar and the Maldive Islands.

It can be readily understood that "the trade" is interested in maintaining so lucrative an industry, and in hushing up any disagreeable exposure of its more revolting details—which may explain why so few, if any, protests have been made against it in this country. Unfortunately it is difficult to see how the cruelty can be stopped; but if attention is called to it in the public press this may possibly be of some avail, and lead to the worst features of the system being abandoned, for there is some reason to believe that the use of fire in removing the shell is unnecessary. The *Evening Standard*, for instance, refers to the process as "a barbarism which, it is to be hoped, like plucking geese, will soon be ancient history."

Needless to say, all humane people will share that hope. But we trust, in view of the facts cited above, that they will go further, and by substituting mineral compositions such as vulcanite, or ornamental woods such as ebony, or metal adorned with jet or cut steel, will avoid, as far as possible, the use of tortoise-shell.

Humanitarian League, JOSEPH COLLINSON.
53, *Chancery Lane, London, W.C.*
January, 1900.

REVIEWS AND EXCHANGES.

A Domestic Menagerie. Translated from the French of Théophile Gautier, and illustrated by Mrs. William Chance. Elliot Stock. Price 3s. 6d.

CERTAINLY there need be no excuse made for giving the English reader a translation of so delightful a work as Théophile Gautier's "Ménagerie Intime," but, were excuse needed, Mrs. Chance's illustrations would alone be sufficient. The translation catches much of the spirit of the original. Cat-lovers will rejoice in the book; but dogs, ponies, chameleons, lizards and magpies come in for a share of the author's attention.

With a Southern Field-Club. By H. Stuart Dove, F.Z.S. Messrs. A. W. Birchall, Launceston, Tasmania. Price 1s. 2d., post free.

This is an informal narrative of the first season's doings of the newly-established Observers' Club at Launceston, Tasmania, from the pen of a valued contributor to NATURE NOTES. Containing accounts of various rambles and the finds, both botanical and zoological, made in the course of them, it affords an interesting glimpse at the natural history of our almost antipodean colony. Though misprints are somewhat numerous among the scientific names, the general format is very creditable to the infant society, to which we wish every success.

The Mycetozoa and some questions which they suggest. By the Right Hon. Sir Edward Fry and Agnes Fry. "Knowledge" Series. Price 1s.

A friend has called our attention to the fact that in our recent review of Dr. Macbride's "North-American Slime-moulds" we omitted any mention of a valuable introductory article on the Mycetozoa contributed by Mr. Arthur Lister to the third volume of NATURE NOTES. The handy little reprint before us, of articles which we have read with much interest month by month in the pages of our learned contemporary, comes as a reminder that Sir Edward and Miss Fry, like Mr. and Miss Lister, are living witnesses to the suitability of these lowly organisms for the study of man or woman jointly or severally; that the study

presents all the attractiveness of an as yet unexhausted field; and that the authors and others have provided us with introductory manuals at once accurate, pleasantly written and inexpensive.

The New Gulliver or Travels in Athomia. By C. T. Druery, F.L.S. Published by the author, 11, Shaa Road, Acton, W.

Mr. Druery is a rash man to provoke by his title a comparison with the second greatest prose allegory in our language. The "Pilgrim's Progress" and "Gulliver's Travels," we imagine, owe their immortality not to the moral allegory of the one or the political allegory of the other, but to the intrinsic interest of the story itself in each case, as a story. These two most dissimilar stories agree in this that they achieve a marvellous verisimilitude by an extreme and even lengthy elaboration of detail. It is not much to say to Mr. Druery's discredit to state plainly that in a short story of 160 pages he has not produced such an effect. He lets us into the secret of his forty winks at the outset, his allegory is transparent, and apart from it, he has but little story to tell. We doubt whether anyone without leanings towards the observation of Nature would care for the tale as a tale; but there—as the author says—it is the point of view that is all important. Have we but a garden, if only an acre (or even less) in extent, we cannot fail to learn much pleasant lore from the point of view that Mr. Druery suggests. Space does not permit of our quoting any passages; but, considering that the writer is well-known as an authority on ferns, it is not surprising that chapters ix. and x. are, to our mind, the best in the book. Mr. Druery has published more than one volume of verse, and we found in reading it that a considerable part of the present work, though printed as prose, is in fact written in blank verse. Fifteen clever drawings by the author enhance the charm of a very pleasant book.

Received:—*The Teacher's Review* for January, containing a continuation of Mr. W. Johnson's "A Year's 'Nature Notes' in a London School;" *Board of Agriculture Leaflets*, No. 56, The "Canker" Fungus, *Nectria ditissima*, No. 60, The Wood Leopard Moth, *Zeuzera Æsculi*, both well illustrated and very interesting, and No. 61, Sheep-Scab; *The Victorian Naturalist* for December, 1899; *Science Gossip* for January, more than up to its usual level; *The Naturalist*, *Humanity*, *The Animals' Friend*, *The Animal World*, *Our Animal Friends*, and *The Agricultural Economist* for January.

NATURAL HISTORY NOTES AND QUERIES.

Instinct in a Rat.—The following rather "tall" story reaches us from the West Indies:—A rat will climb a cocoanut-palm to get at the coco-nuts. He then bores a hole and gets inside and eats out the contents. But how is he to get down again, seeing that he cannot scramble down head foremost and cannot jump from so great a height? He leans out of the coco-nut and bites off the stalk and the nut falls. But here comes the best part of the story. When he is about four feet from the ground he jumps out to avoid the bump!

Pet Rabbits.—Seeing your correspondent's account, in January NATURE NOTES, of pet rabbits, I think your readers may be interested in hearing of a pet rabbit owned by a niece who was living with us at the time. Two small wild rabbits were taken out of a nest and given to her. She kept them in her room all night; if cold, the basket containing the babies was put into her bed. They were fed with milk and water off a feather, and after a while learned to drink out of a spoon. These young rabbits very soon got quite tame, and would play about on their mistress's bed, "going to ground" under the clothes if any one came near. They played about the room, racing over the floor and furniture. During the day they spent much time with their mistress and a colley pup, with whom they were great friends, and they used to scamper about and play with him and he with them. As the summer went on they were put in a coop on the lawn, and one day one got away, so the other was turned loose too. The coop was left, and food put for them there, and the rabbits would come out of the bushes when

called, run about over one's dress and hunt pockets for oats or other delicacies. They were very fond of bits of apple. All through the autumn and early winter they prospered, and I have often seen their mistress sitting on the ground with the rabbits running about her knees, the colley sitting behind her looking on, and a robin taking part in the picture, sitting on the top of the rabbit's coop and on the look-out for bits. It is sad to have to say that these most interesting tame wild rabbits met their death from a neighbour's dog who came marauding one day, as the two bunnies did not recognise that he was an enemy, and so were killed. I can also remember a tame wild rabbit that lived in a fishmonger's shop near Chesham Place in 1879. The rabbit used to be quite loose in the shop, hopping about at his ease. At times he would lie asleep on the doorstep or in the entrance to the shop. I was told at the time that this rabbit had come into the hands of the owners among a lot of rabbits sent up after some big shoot in the country. Among all the dead ones he had been found alive, and had been nursed back to health and happiness.

C. E. Meade Waldo.

In Nature Notes, January, 1900, p. 13, I see the suggestion that rabbits should not be lifted by their ears. Having kept various pets all my life, I think I have found that the best way to lift a rabbit or hare is by the ears, giving at the same time support with the free hand under the animal's body. Cats and dogs I lift by the back of the neck, and then support them underneath in the same way.

January 8, 1900. E. G. Woodd.

Pet Guinea-Pigs.—When I was a boy my constant petition was for pets, and I had a great variety. Amongst them was a pair of guinea-pigs, which were, in summer, allowed the liberty of the fields, and in winter kept in the kitchen generally. As they are inveterate enemies of rats, with which we had some trouble, we put the guinea-pigs in the cellar, a large well-lighted and ventilated one, and they rapidly cleared the rats out. Finally, however, the male had a fight with a rat larger than himself, and though he killed the rat he was so bitten that we brought him and his mate back into the kitchen. He lingered for two or three days, but one night my father, who slept in a bedroom off the kitchen, was awakened by a wailing of the female guinea-pig, like, he said, the crying of a child, which continued all night. In the morning we found the male dead, and his mate continued to bewail him, refusing to eat or drink until she, too, died. Nothing that we could do for her diverted her from her dead mate, and she died in two days of actual starvation surrounded by everything we could get to tempt her to eat.

Deepdene, Frimley Green, Surrey. W. G. Stillman.
January 6, 1900.

Signs of Spring. — Many people only expect and only find tokens of the advent of warmer days in plant life. It is a joy to me to see them in living creatures too. For the last week or ten days the cock-blackbird has been gradually acquiring his orange-coloured bill, the yellow beginning to show first at the base. Now the starlings are following suite, and flurry about the lawn with undignified haste, probing the ground with their bright-coloured bills, which in some individuals are still horn-coloured at the point.

E. G. Woodd.

Hen-Harriers.—Hen-harriers at rare intervals visit a small pen half a mile below my house. Some time ago a male remained about here for eighteen months. I saw him frequently, but could never discover a mate. After an interval of five years another of these birds, a female, has appeared. She seems to be an unsophisticated member of her race, for she goes perilously near human dwellings, and I fear her career will be short.

Market Weston, Thetford. Edmund Thos. Daubeny.
Christmas, 1899.

Gulls in London.—Can any reader give me any authentic information as to the following points:—(1) Have the black-headed gulls begun to roost and pass the night on or near the water in St. James' Park, as I have seen and heard them in quantities there as late as 5 o'clock p.m., when it was almost dark; and (2)

where do the birds fly to in the evening that spend their day on the Thames between bridges? I fancy they pass the night in or near Mucking Flats on the north shore of the Thames, below Gravesend, the first wild or desolate tract of land found on descending the river.

32, *Shaftesbury Avenue, W.* P. E. CLARK, M.C.S.
January 12, 1900.

SELBORNE SOCIETY NOTICES.

Selborne Saturday Afternoons:—

Saturday, February 10, 1900.—Natural History Museum: Minerals: 2 to 4 p.m. Meet Mrs. Myles in the Central Hall at 2 p.m. *sharp.* Guide, Mr. L. Fletcher, F.R.S., Keeper of the Department.

Council Meetings.—The next Council meetings will be held on February 6 and 20 at 5.30 p.m.

Field Club.—After the Council Meeting on Feb. 6, at 6.15, there will be a meeting of the Field Club Committee. All *Members* of the Selborne Society interested in the Field Club Rambles are *particularly* requested to attend this meeting.

NEWS FROM THE BRANCHES.

Croydon and Norwood.—From the spring syllabus which has just come to hand, we note a series of lectures and addresses which have been arranged by the Hon. Sec., as well as a preliminary announcement that Rambles will be held on the third Saturday in each of the summer months. There being no candidate for the post of Honorary Secretary, Mr. E. A. Martin, F.G.S., will continue to occupy it, and will for the present attend the Council as Branch Delegate.

ANSWERS TO CORRESPONDENTS.

N. C. W.—If not too late, try a drop or two of castor oil administered through a quill.

J. H. D.—We have many junior members—even bairns—to consider, and have no wish to encroach on the spheres of *Science Gossip*, *Knowledge*, or *Nature*. As it is the organ of the Society any increase in the size of the magazine would involve many considerations besides the mere addition of a penny to its price. For information as to collecting and preserving plants, get J. M. B. Taylor's "Handbook of Plant Collecting" (Messrs. Parlane, Paisley). As to insects, perhaps Mr. W. F. Kirby's "British Butterflies, Moths, and Beetles," and the Rev. J. Greene's "Insect-Hunter's Companion," both published by Messrs. Sonnenschein at 1s. each, and "The Larvæ-Collector's Guide," also 1s., published by Messrs. J. and W. Davis, 31, Hythe Street, Dartford, will serve your purpose.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 123. MARCH, 1900. Vol. XI.

SELBORNIANA.

Our President.—Unfortunately, we went to press last month just before the news reached us of the title which our President has chosen. We are, therefore, a little jealous of our friendly rival, *Science Gossip*, which was beforehand with us in stating that Sir John Lubbock will in future be known as the Right Hon. Lord Avebury, from his property in Wiltshire, which contains the greatest of English megalithic, or so-called Druidical, monuments. Aubrey says of it that it "did as much exceed Stonehenge as a cathedral does a parish church."

The Royal Buckhounds.—The petition promoted by the Sports Department of the Humanitarian League was presented to the Premier on January 27. It bore the signatures of 5 lay peers, headed by the Earl of Stamford, the lineal representative of Gilbert White; of 8 bishops, 77 members of the House of Commons, 8 deans, 14 provincial mayors, 12 principals of colleges, 5 University professors, and 24 head-masters of public schools.

Humanitarian League Conversazione.—A Conversazione is announced by the Humanitarian League, to be held on Wednesday, March 21, at St. Martin's Town Hall, W.C., from 8 to 11 p.m. Tickets, price one shilling each, can be obtained from the Office, 53, Chancery Lane.

Flowers of the Field.—The twenty-ninth edition of the Rev. C. A. Johns' "Flowers of the Field," is published to-day. It has been entirely re-written by the editor of Nature Notes, and now, the description of the grasses and sedges being incorporated, amounts to 982 pages. It contains a number of new illustrations by Miss Emily Carter, and is published, by the Society for Promoting Christian Knowledge, at 7s. 6d.

HOW SCENERY IS MADE.

III.—Origin of Clay-Rocks.

WE must now consider what the sea can do. Every one has noticed how the waves beat against the cliffs at high water, and especially in stormy weather in winter, when huge masses of rock frequently fall down, being undermined below, and aided by water freezing in the cracks and so thrusting them outwards.

Paths running along the edges of sea-cliffs have again and again to be made further inland, as, for examples, along the Chalk cliffs at Margate, and the London Clay cliffs at Felixstowe; so that houses, &c., once far inland, find themselves in danger of perishing. The church at Reculver in Kent, and that of Eccles in Norfolk, are good examples; for many years the tower alone of the latter stood on the beach. Similarly at Cromer, a new light-house had to be built farther away from the edge of the cliff.

In some cases, as with the chalk cliffs on the south coast, there is an underlying sloping bed of clay, and when much water has reached it, the chalk cliffs slide down it causing great landslips. The materials are thus brought within the action of the waves, which in a few seasons may clear them all away.

What becomes of all the solid substance of many miles of land thus destroyed and swept away in course of time? The harder portions fall and remain to form the beach pebbles, and the finer sand comes next. If the cliffs be of chalk, this is dissolved, but the finer particles of clay are carried out to sea, suspended in the water, till, at last, they finally settle down to form a sea bottom of clay.

Several of these clay sea-beds have become dry land again in the course of ages, and in consequence of their upheaval. Thus the great valley of the Severn between the Cotswold and the Malvern hills mainly consists of the Lias clay abounding in marine fossils, shells, &c. Another called Kimeridge clay occurs near Swanage. Cambridge stands on a third known as the Gault, the same clay bed which underlies the Chalk at Folkestone and causes the landslips in that neighbourhood. The London Clay forms a great triangle: the coast line from Aldborough to Deal is one side, the other two meet at Newbury. A portion of this was deposited in an estuary, as tropical fruits, like those of modern estuarine screw-pines, together with turtles, &c., are found in the clay of the Isle of Sheppey.

The Wealden clay beds of central Sussex were in part estuarine; but the great "glacial" drifts of East Anglia, which are mainly composed of clay, had better be considered as a result of ice-action.

Clay being soft is, of course, easily removed by running water; consequently, however flat the bed might have been

when deposited at the bottom of the sea, when it arose and became land the rain, after centuries of work, has cut away extensive areas, wherever the first formed rills found their way down, forming brooks and finally rivers. Hence a clay country has no very marked features, being often flat, as about Cambridge and Ely, or undulating as in Suffolk and Norfolk and the valley of the Severn.

A feature due to "denudation" of cliffs by the sea-waves is seen along our coasts in the form of "outliers," *i.e.*, columns of rock isolated from the mainland. Thus the chalk "Needles" at the west end of the Isle of Wight were formerly united to the cliffs at Studland Bay on the west, before the sea broke down the barrier and so made the Solent.

Now if we follow the line of the Cotswold Hills from, say, Stroud to Rockingham, we find similar but much larger outliers in abundance all the way through Gloucestershire, Oxfordshire, and Northamptonshire, with numerous river-valleys having the same limestone for their sides, but the Lias clay at the bottom for the river-beds. There is one of these outliers so far west as near Upton on Severn, showing that the whole of the Severn valley was once covered with the same yellow limestone as may be seen at the Leckhampton Hills by Cheltenham, which stands on the Lias clay.

With regard to the characters of clay:—when it becomes hardened by pressure, it splits into flat fragments called "shale." If you happen to be near a coal-mine, you may see great quantities thrown out into heaps by the pit's mouth, often having impressions of ferns upon them. This was the clay in which the plants grew, as well as that which was thrown down upon the plants and buried them, now forming the "roofs" of the seams of coal.

But the finest scenery in the world is the result of clay-mud after it has gone through the process of hardening, by pressure and heat, when it becomes slate, and has undergone great terrestrial upheavals, so that what was at first horizontal may become even vertical.

The peculiar way in which slate rocks split causes the rocks to become pointed and jagged, whence the word "dent" or tooth, so frequently applied to mountain tops in Switzerland, as around Mount Blanc.

The slate rocks being excessively hard are not worn down either by "weathering" or decomposition, as even granite can be: they split, however, into rhomboidal or lozenge-shaped masses, and these, loosened by frost, fall out. This result in the Swiss mountains is very marked, for these depressions give opportunity for snow to accumulate in the higher regions, forming the so-called "couloirs" or basins wherein the great glaciers take their rise.

The chief mechanical use of slate is for roofing purposes. The possibility of this resides in the property of "cleavage."

This results from pressure alone, for any comparatively soft material, even wax, if kept in ice, can be made to split into flat plates at right angles to the direction of the pressure. Flaky pie-crust exhibits a similar phenomenon. The interpretation is a simple one. If, as an illustration, we place a board on a heap of stones of all shapes, and then press down upon it, the pebbles will all lie in one plane with their long axes in that plane. So if it be imagined that clay is composed of unequal-sized particles, these, too, will arrange themselves in a similar manner. Hence when the slate rock is split, it will obviously do so along the planes or lines of cleavage.

When a thin slice of slate is examined under the microscope the particles are actually seen to be thus arranged exactly in accordance with this theory first proposed by the late Professor Tyndall.

There are several kinds of clay in its original soft condition, all of which are compounds of the metal aluminium with oxygen, called alumina, mixed with silica, iron, and other matters. They furnish several uses. Thus, when granite is decomposed, one of its ingredients, felspar, gives rise to a soft unctuous clay called kaolin, as at the old tin mines of St. Austell, in Cornwall. This is used for china. Potter's clay is another variety, so also is pipe-clay. Ferruginous clay, that is, clay containing iron in the form of rust, is common brick earth, which makes red bricks; but if the iron is united with silica it makes white bricks.

The basis of clay, alumina, is known as one of the hardest of minerals—indeed, it comes next to the diamond. Corundum and emery are forms of it, as also the precious stones sapphire and oriental ruby.

George Henslow.

A NATURE RAMBLE IN MALABAR.

PERHAPS your readers may be interested to hear of some of the glimpses of animal life to be witnessed during a stroll on the banks of a river in this part of the world. It is scarcely correct to call it a stroll, however, as the bamboo is so dense (except here and there a stretch of about a hundred yards or so) that strolling is out of the question, and a scramble is nearer the mark.

The river in question is the "Cubbany" which rises in the Western Ghauts and flows within a distance of three miles of this bungalow. Let them imagine themselves on the banks (a much easier mode of travel than to walk three miles in the sweltering heat of the tropics), and watch with me the different objects of interest as they appear in their natural haunts.

But first of all let us get underneath the shade of that wild

mango tree, close to the water's edge, and settle ourselves in comparative comfort, though, even if one have on a "topee" that would almost do duty for an umbrella, it is not sufficient to keep off the scorching rays of the sun.

The first to attract our attention is a small and beautiful kingfisher almost identical in appearance with his European relative, though perhaps a trifle smaller. He skims up the river towards us and perches on a dead branch of a sunken tree that projects out of the water, and, after giving vent to a few shrill notes and jerking his apology of a tail two or three times, settles himself down to watch for some unwary victim; and woe betide any small fish that is misguided enough to leave its mother's apron strings and come within reach of that sharp and unerring beak. But he is not going to gratify our curiosity by showing off his powers as a fisher, as he has seen us and is off, his brilliant plumage shining in the sun like polished metal. Why he should be so sensitive about being observed I cannot make out, as he certainly has nothing to be ashamed of, at least as far as his personal appearance is concerned. There are no fishing laws here to sanction his destruction as a destroyer of fry, but perhaps his conscience (if he have one) tells him that his methods of procuring a meal are not altogether sportsmanlike in the eyes of a disciple of old Izaak, and that he will be condemned in future to dangle a hook with a worm on it from the end of his bill. I am afraid his first cousin in England will have to adopt that means of earning a livelihood, if not to be ruthlessly shot down and exterminated merely because he has the misfortune to have a weakness for such dainty morsels as salmon or trout fry.

But here comes one of his larger and less gaudily painted relations, making a noise for all the world like a maniac laughing at some diabolical piéce of mischief he has perpetrated. This bird is not so shy as its more diminutive relative, and is obliging enough to settle on a branch overhead and near enough for us to examine almost every feather of its plumage. It evidently means business, as it has, with unconscious rudeness, turned its back on us and, with its big ungainly beak resting on its breast, is gazing steadily into the water.

We will take a mean advantage of its back being turned to examine its plumage. It certainly is a handsome bird with its shining blue wings and tail, red and white breast and blue head. The large beak is not an improvement to its otherwise *distingué* appearance and would—but it is not going to stay to be criticised, as it has espied an unwary fish in the water beneath, and is down like a flash on its luckless victim. The beak may not be pretty to look at, but it seldom, if ever, fails to catch its slippery prey. The bird has disappeared entirely beneath the water, but appears again in a moment with a small fish held securely in its bill and struggling helplessly to escape. The fish is borne off to a tree some little distance away, to be disposed of at leisure by his captor, who seems to take a cruel delight in

feeling him wriggle and squirm in vain endeavours to regain his native element. The bird makes no attempt to end his misery, but waits patiently while the struggles become feebler and feebler, and, when all motion has ceased, the tragedy is ended by a backward jerk of the head and a gulp or two.

But a sharp pinch on the back of my neck makes it painfully evident that we have been sitting at the foot of a tree in possession of red ants—bloodthirsty little ruffians who absolutely do not know what fear is, and are always ready to challenge anything or everything to single combat. If they once get their jaws into a thing they'll rather leave their heads behind than take them out again, and, as we can do nothing against such an army of warriors armed with decidedly formidable, though diminutive weapons of offence, we will leave them in undisputed possession, and beat a hasty and undignified retreat with our backs to the enemy. They are "Red Coats," and they certainly show an example in bravery that a Red Coat of Her Majesty's Army never need, and never would, be ashamed to follow.

Let us make our way through the jungle to that open space a short distance up the river, which commands a view of a considerable stretch of deep, still water, a likely-looking place for a crocodile to lurk in.

A closer acquaintance with the "feathery bamboo" painfully proves that it is not so "feathery" as one has been led to believe, but is armed with formidable thorns which are capable of inflicting a very ugly wound if not treated with all due deference and respect. I strongly recommend to any ladies of the party the use of "rational" costumes, as it is an absolute impossibility to get through a bamboo jungle with such an encumbrance as a skirt. However, that difficulty does not trouble those who travel only in imagination, so, having taken care to select a tree free from our former tormentors this time, we will settle down and see what is to be seen. There is scarcely a sound to be heard at this time of day except an occasional splash of a fish rising, or the rustle of a lizard in the dead leaves close at hand. But look! What is the possessor of that snaky-looking head appearing out of the water about mid-stream? Is it a snake? No, because its body can be dimly seen under the surface, and not even that of the Sea-Serpent is shaped like a soup plate. It is one of the large river tortoises that are fairly common in this river, but you must keep very still or he will disappear as mysteriously as he came, being one of the shyest of the Chelonians. He floats past with his head well out of the water, which is too muddy to allow us to see more of his body than the dim and indistinct shape. I have several times seen these tortoises basking in the sun on a log or projecting stone, but to obtain a good view one must stalk them on hands and knees (a difficult and sometimes painful proceeding amongst bamboos) as they disappear beneath the surface at the slightest sound or approach of danger. I got so close to one one day

that I could almost have touched it with my hand, but it did not seem at all anxious to cultivate my acquaintance, as it dived in a great hurry when it discovered that I was a two-legged beast of the genus Homo.

But listen! What makes that unearthly sound like the "mew" of an enormous cat? Not a tiger, surely! No, don't be alarmed, as the owner of the discordant voice has just appeared and turns out to be nothing more formidable than a beautiful peacock, which sails majestically across the river with his head stretched out to the fullest extent of his long neck, and his magnificent tail flowing like a train behind him. There is an air of regality about him with his crowned head and jewelled plumage that entitles him, in my opinion, to the proud position of king among birds; but he certainly ought to keep his mouth shut, as his voice is anything but majestic. Whether the "voice of the charmer" charms his more soberly dressed spouse or not is a matter of conjecture. There is no accounting for tastes; but I dare say his gorgeous apparel makes up for vocal peculiarity. "Fine feathers make fine birds," you know.

But do you see that crocodile swimming slowly across the river some little distance away? How exactly like a log he looks and, if it were not for the fact that he is behaving in a manner contrary to what a well-behaved log ought to do, viz., floating *across* the stream, he might very easily be mistaken for one! But let anything eatable come within reach, and the "log" proves itself to have a pair of very powerful jaws armed with a terrible row of sharp teeth.

Talking about crocodiles, I may relate a tragedy I saw enacted one day while fishing, the victim being a young crocodile, and the perpetrator, that black and shameless villain, the crow. My attention was attracted by hearing most distressing cries proceeding from a spot a short distance down the river on the opposite bank, and, on looking in the direction, I saw a crow struggling with something, and, as I thought, being dragged nearer and nearer to the edge of the water. Being curious to see what was the cause of the commotion, and thinking that the bird had been caught by a crocodile, I made my way to a spot opposite to where the struggle was taking place. Judge of my surprise on finding that it was not the *crow* that was the victim of the crocodile, but the *crocodile* that of the crow. The reptile appeared to be about eight or ten inches in length, and was struggling desperately but vainly to reach the friendly shelter of the water. Every now and then the crow gave its miserable captive a vicious dig with its powerful bill, which caused it to cry in the most piteous manner, and renew its struggles for liberty with redoubled vigour; but all to no purpose, as it was held as in a vice by the strong claws of its captor. After one or two vicious dabs, the crow managed to dig out its wretched victim's eyes, and had I had a gun in my hand at that moment, I should have shot the murderous villain dead, and so ended

his life of wickedness, as the crocodile uttered cries that would have melted the heart of anything that was not so utterly heartless as its relentless enemy, who seemed to take a pleasure in putting it to death by a slow process of torture. After all, if it were not for the everlasting warfare waged in Nature, the world would soon cease to be habitable, and the crow was only doing its allotted duty in Nature's battlefield, though it might have performed it less cruelly.

Now, as the shades of night are falling, and I have to wend my weary way through three miles of jungle, we will bid the river "adieu" until some future occasion; and I only wish the wings of imagination would lift me over the tops of the bamboos to the bungalow as easily as they will transport your readers back to dear old England.

ARTHUR W. STRACHAN.

AMONG THE ROBINS.

AVERY paradise for birds is to be found in the gardens of the Manor House at Little Shelford, near Cambridge. The owner, Mr. Walton, and his niece, who take a warm interest in their feathered friends, discourage visits from the cats of the neighbourhood, and do their best to convince the marauding boy that the way of transgressors is hard. The gardens, lawn, and meadow, which afford plentiful cover for nesting, are surrounded by a protective belt of trees, and intersected by the river Cam—at this part a slender stream, though amply sufficient for the needs of the bird-world, and affording a home and livelihood to some beautiful kingfishers. A large lawn, sloping from house to river, is visited by the shy little moorhen in the early morning, before the wide world is astir, and at nightfall is thronged by thrushes and blackbirds, the late diners of the feathered tribe. Gay little bands of long-tailed tits rush to and fro between the trees that skirt the lawn, and the tiny, beautiful goldcrest slips in and out of the shrubs and shines like a jewel in the dark branches of yew and cedar.

How shall I describe the harmonies of that happy garden, the song of praise that hails the first light and outlives the setting sun? The voice of blackbird and thrush resound above the rest. They began the day, and they alone end it; but chaffinch, linnet, warbler, and a host of other voices have all their little day—and the little brown wren, whose voice is to me a wonder that custom never stales. It was truly half joke, half miracle, to hide that brazen trumpet in so small a throat. The cold, clear nights of March and April bring the nightingale to some favoured trees near the river, from whence

his song pours forth like moonlight turned into music. His daylight song has more soul and colour; it is infinitely richer and more varied than that which has made his fame; but, as someone has wisely remarked, "The picturesque fixes the world's ideals," and thousands rave about his serenade who do not so much as know that the nightingale sings at all by day.

The harsher tones that mingle with the chorus seem only to enhance its sweetness. A flourishing colony of jackdaws in an outbuilding of Elizabethan date, the relic of an older Manor House, propound villainies to each other in that base chatter which is the very "yiddish" of bird languages. The rooks hold more honourable converse in the trees beyond the river, and the gossipy voices of the titmice are heard all day long. The soft monotonous coo of the ringdove blends admirably with the richer harmony. I must remark, in passing, that my observation of this bird in its social and domestic capacity do not verify the lessons, derived, I fear, from a regrettable trust in appearances, which poets and moralists sedulously imprint on the plastic minds of infancy.

Four cousinships of titmice, the gorgeous ox-eye, and dainty blue tit, together with the more sober-hued marsh and coal tits, form part of a vagrant population that haunt Miss Walton's bedroom window, the sill of which is an ornithological restaurant where supplies never quite fail all the year round. In the colder months it is richly stocked with poppy and sunflower heads, tempting hollows of cocoa-nut for little birds to dip into, lumps of fat for the nuthatches, and hempseed—cause of much wrangling among the fierce-eyed, passionate greenfinches. Where so many trees are, the green and the lesser woodpecker find an easy living; while in spring the hawfinches batten on green peas, and the bulfinches diet themselves on young fruit-buds. A secluded court attracts occasional visits from a grave and stately brown owl, on whom visitors are invited to gaze reverentially as if he were a Crowned Head or a Sirdar. The latest acquisition is a bold, bad, beautiful jay, who was found disporting himself on the lawn without fear or shame. Even here his bad name had like to have been his undoing, for the gardener cheerfully observed that he supposed Miss Mary would have no objection to his making away with that "mischievous creature." Needless to remark, this impious suggestion was sternly frowned down, and the right of sanctuary accorded to the poor jay, who, with his whole felonious clan, has, in truth, sore need of it.

The pride of this Shelford Garden, however, are the robins —tamed by Miss Walton—robins who walk round hat-brims and sing on the top of parasols, utilise people's hands according to need, as dining-table or duelling-ground, and regard the human thumb as an ingenious instrument expressly designed by Providence for them to cleanse their beaks on. This intimacy with the robins has lasted now for many months. It had its beginning

in the summer of 1897, when Miss Walton was sketching in the garden. A robin haunted the scene of her sketches, and intimated his willingness to receive hospitality by picking up the breadcrumbs that fell from her erasures. These overtures were met half-way with offerings of cheese, cut small and fine. "Ruby" soon lost all fear of humanity, and became a tender and affectionate little bird-friend, welcoming his lady's visits with much joy, enlivening the sketching times with beautiful bursts of song, and showing many pretty traits of character. On one occasion he displayed some pardonable irritation against a shrew-mouse, which crept on Miss Walton's lap and sampled *his* cheese in a most annoying way. Ruby ruffled his feathers and reproved the mouse, but in vain; then, with puffed-out breast and open wings, he invited him to come on and see which was the better man; but the irresponsible creature only waltzed frivolously after his own tail. So as there was nothing to be done with the aggressor, either by remonstrance or intimidation, Ruby lost no time over storing the cheese in the only safe place for such good things.

The enjoyment of Ruby's sweet company was measured, alas, by the space of a few brief weeks. "There is no fold, however watched and tended." One day a vagrant cat was spied in the shrubbery, and driven away with well-merited contumely; but Ruby came no more. The ensuing winter brought a gang of robins to the windows in quest of sustenance. They quarrelled terrifically for Miss Walton's favours, but I think only two became in any degree tame. Of these, Robin Adair soon followed the example of his namesake in the song, while Rob Roy flourishes to this day in a grove near the front of the house. Always a bold rather than a tame bird, and by no means affectionate, he would never learn to fly up on to the hand, but has to be fed on the ground from the little box of cheese without which Miss Walton would not dare to cross the threshold or show her face at a window. Still, in the winter, he frequently condescended to ride from the bicycle house to the front door on the handle bar of her machine; and though he has the name of a cateran, he has the manners of good society, for, one spring day, he brought a shy little Helen Macgregor up to the front door and introduced her to the lady—and the cheese-box.

The summer of 1898 brought forth a contingent of downy, half-grown creatures whose speckled breasts bore witness to the robin's kinship with the thrush. One after another fell captives to blandishments and cheese, Ruby ii., Raggie, a little hen-bird so called from her fluffy and dishevelled plumage, a minute person called Snatcher, Bien-Aimé the Beautiful, and Big Boy, a portly fellow whose distrust of human methods and intentions rendered him a hard conquest. When their breasts turned red their hearts grew hot and fierce, and awful battles were waged until, by who knows what system of delimitation, the garden

was portioned into territories. Ruby, strongest and most astute, secured an excellent position on the terraced path between house and lawn, where, perching on the balustrade of some steps to a French window, he could at once command the attention of the household and keep his own kindred at a respectful distance. Raggie gained the freedom of half the lawn, and looked like a little red blossom in the heart of a yucca, in which she elected to dwell. The other half was dominated by Big Boy, while poor Snatcher was relegated to a remote cedar and bullied by all the rest till he relapsed into semi-barbarism, coming occasionally for a mouthful of cheese, but not daring to indulge in social intercourse.

Bien-Aimé's lines have fallen on a path between river and kitchen-garden, with the second apple-tree for his perch, the first being occupied by his mortal foe, Pouncer, a really bad-hearted bird. The spirit of John Calvin might be re-incarnated inside Pouncer's red waistcoat, to judge by his inveterate dislike to the sight of other people enjoying life. His puritanical temper steels him even against the desire of cheese, and he never sets foot on mortal hand—this sounds like a bull—except when the sight of Bien-Aimé lunching becomes more than his acrimonious heart can bear. Then he swoops down and drives him into temporary exile beyond the river, from whence Bien-Aimé, who is no fighter, but a splendid singer, returns to pour out the most moving and pathetic strain, which has not the slightest effect on the adamantine Pouncer.

The robins are perfectly friendly to visitors, and, generally speaking, will come to anyone who invites them; but they prefer Miss Walton, answer her call and whistle, and follow her about the garden in a manner most fascinating to behold. The British workman, coming for orders, has more than once had his mental horizon enlarged by the sight of Bien-Aimé hopping down incontinently from a tree and peeping over the brim of her hat, or Raggie rushing impetuously into collision with the object of her affections; his surprise usually taking the form of a murmured, "Well, I'm blowed!"

The individuality of these little birds is perfectly wonderful. To untutored eyes one robin, no doubt, looks much the same as another, but to those who have watched them month after month and coaxed them into friendly confidence they differ as much in temper, appearance and character as our human acquaintances. They are indeed notably diverse in such details as weight and build. Ruby and Big Boy are sleek, handsome birds with good colouring, and a fine stripe of blue-grey feathers bordering each side of their breasts; but in Bien-Aimé the olive-brown back is full of delicate and varied tints, and the blue-grey stripe is carried round him in a line diminishing to the thickness of a hair, and exquisitely drawn. His red waistcoat terminates in two perfectly symmetrical scollops over a nether garment of far more creamy and even hue than any

of the rest can boast. He also has an exceptionally large eye with a very conspicuous dark hazel iris. Ruby is emphatically cock of the walk. He assumes the airs of a god to all other robins wild or tame, and Big Boy alone occasionally undertakes to remind him that he, too, is mortal and a robin. Withal he is the most exacting in his demands for cheese and attention, and if any window is open he enters boldly and perches on a chair-back to sing. He is devoted to his mistress in an unsentimental way, and shows his regard by pretending to fight her fingers. Raggie, on the other hand, was always of the "eternal feminine" type, a little creature of warm heart and complex emotions. She would rush to meet her friends with such vehemenence as to dash herself against them, recovering her balance with a clutch at coat or hat brim; and had a delightful way of snuggling down into one's hand with coquettish upward glances expressive of the utmost felicity. Full of sudden impulses, she would sometimes display the most abject cowardice in her encounters with Ruby and Big Boy, at other times snapping her beak fiercely and fighting with the best. She was utterly without conscience in the matter of trespass, enraging Ruby by poaching at his windows, and concealing herself in Big Boy's private laurel bush to waylay Miss Walton going to the greenhouse. On such occasions she was promptly despatched to her yucca, if the indignant Boy caught sight of her. Alas! for the evil fate which compels me to speak of Raggie in the past tense! Her short, happy life came to an end with the old year. One whole day she never responded to her mistress's call: the next, her poor little body was found in the chestnut walk, stark and cold. Apparently she had strayed to that remote part of the garden and been pecked to death by strange robins. *Carissime, valde deflende*, you have your tiny grave under your mistress's window, and a learned man has written your epitaph. This, for a little robin, is fame.

Bien-Aimé illustrates the gentler side of robin character. It is pretty to see him walking to and fro before Miss Walton in a perfect ecstasy of delight, gazing up at her and warbling the softest, sweetest little song of welcome. When Pouncer has a pious day, and makes himself correspondingly odious, so far as dull mortal thought can penetrate a robin's mind, Bien-Aimé seems to pour out his sorrows into her sympathising ear. His voice grows shrill and agitated, and his look and attitude are eloquent of unrighteous persecution meekly endured.

The New Year which knows not Raggie has added Cherry to the company, and Cherry's sex is a matter of speculation to the human friends of these robins. Ruby was supposed to be Raggie's husband, not an ideal spouse by any means, but they were often together, and though he knocked her about mercilessly, he took her part against other robins. After her

demise he was absent for the best part of three days; then he returned bringing Cherry, who since that day has been his constant companion. Cock robins are never very friendly, and least of all towards spring; but Cherry, though slightly mottled on the head, and with the duller tints that are usual to the female bird, has a loud, clear, masculine song. He or she became immediately tame, apparently on Ruby's affidavit; but in robin-taming it is emphatically *le premier pas qui coûte*, and in a garden with several tame robins even wild ones will now and then drop down into the hand that offers cheese.

A notable quality in these robins is their extraordinary power of compelling you to see them by merely looking at you. Bien-Aimé resembles the Ancient Marriner in his ability to hold you "with his glittering eye"; and when walking with my sister in the garden and not for the moment thinking of her feathered pets, Raggie has drawn the attention of one or other of us, at a distance of three or four feet, by the mere force of her gaze, though she herself was quite screened by a broad laurel leaf.

To the scientific naturalist this intercourse with robins will doubtless seem frivolous; and far be it from me, who have no more science than enables me to spell the word correctly, to offer advice to my betters; but the humble lover of nature, whose eyes inform his heart rather than his intellect, cannot but be imbued with what Mr. Ruskin calls the "Franciscan Spirit," and to such a one I confidently assert he will never thereafter regret what trouble it may take to win the friendshlp of "our brother" the robin.

H. E. Walton.

BEES AND BUTTERFLIES AT KEW.

JUST in front of Museum No. 2, in Kew Gardens, there is a small oblong piece of ground somewhat sunken below the surface of the surrounding shrubberies. This diminutive parterre, comprising three beds only, is my favourite haunt when fortune finds me in that unrivalled combination of flower-garden, glass-house and arboretum. Granted that the placid lake, with its fringe of sallows and alders, dominated at the eastern end by a tall linden; with its moist margins adorned by willow-herb and yellow iris; with its green-footed moorhens and babbling sedge-warblers—granted that this resort comes easily second. But the little turf-banked herb-garden before mentioned is so compact and "manageable," so unfrequented and yet so entrancing, that, once there, the clock has struck the hour twice before I realise the fact. Here one may find fennel, clary, horehound, balm, rue, lavender and many

another old-world plant and pot-herb, of whose virtues, real or fancied, the modern housewife takes little heed. Besides being an olitory—to use an archaic term—the plot is an asylum for plants interesting either as sources of food and medicine or as noxious weeds to be admired, maybe, but nevertheless shunned. The purple-veined flaccid henbane grows side by side with the alien thorn-apple and the deadly nightshade bearing its "devil's cherries," the garden beet is abreast of the artichoke and runner bean, and the gipsy-wort of our plashy ditches is in close fellowship with its natural congener the brooklime, or false forget-me-not.

It is August, and the temperature is fervent. The birds are all silent save only an occasional robin, the universal sparrow and the sturdy yellow-hammer. It is too burdensome to move about. Be it mine therefore to lie at full length on the sward and enjoy the olitory. For the present, the larger, and (must it be confessed?) more educational, herbaceous ground shall be passed over, and even the charming tank with its duckweed, arrowhead and potamogeton shall be as if it were not. And yet it is not the best time to see the herbs, for many, including some of those already named, have bloomed and are now fruiting. Stay, that faint murmuring undertone suggests that there are bees to be watched. Bees, stigmas, pollen—Darwin, Lubbock, Grant Allen—cross-fertilisation, modification, responsiveness, refractoriness—the ideas crowd upon and chase each other. Well, I will watch. Shortly, as I expect, I notice an exception to the rule so dogmatically asserted by many writers, that in a given excursion a bee visits only one kind of flower; at least, here is a bee exploring two or three different species. The rule, as a rule, seems sound enough, however. Another striking fact is that, as far as this limited space is concerned, the hive bees and the humble bees appear to keep to separate flowers—their spheres of influence rarely overlap. The "flies," as we may loosely term a number of the smaller Hymenoptera ("membrane-winged"), although the bees belong to the same Natural Order, seem also to feed with their own kind. The flies examine mainly those inconspicuous flowers which are clustered in heads like the corn-marigold, or the parasol-shaped inflorescences like those of fennel. Indeed, it was on the blooms of tansy and fennel that the flies were chiefly noticed, but the umbels of the latter plant had a cross journey or two from a humble bee.

The honey bees themselves patronised marjoram, purple medick, scarlet-runner and yellow rue, but their prime dainties were orpine—a thick fleshy kind of stonecrop—and chicory or succory. The choice was thus for the reds, purples and blues; the chicory, of course, having a delicate azure tint. The yellow flower, rue, had probably other enticements besides colour, for its attractiveness was decidedly slight compared with that of the orpine and chicory. Bees are said to prefer blue, but the season was too late to make a strict comparison—the seasonal range of the blue flowers is earlier.

Turning to the humble bees, the partiality to lavender and elecampane was very pronounced. Elecampane has a bold yellow flower. After these came the purplish heads of teasel and the blue monkshood. Somewhat astonishing it was to find the humble bees so fond of the foul-smelling knotted figwort with its brown carrion-like blossoms. It is commonly said that flies and wasps are the agents of cross-fertilisation in this case. The wasp, too, frequents the flame-coloured gladiolus. On looking for references, however, it is found that the nectar-producing qualities of the figwort have caused American bee-keepers to call it "Simpson's Honey Plant." Another surprise was that the deliciously-scented blossoms of the East Indian safflower (*Carthamus*) attracted only a solitary bee. So, too, the spur-valerian and meadow-sweet were unoccupied, but the best days of the latter were over.

Butterflies next came under review. Cabbage-whites zig-zagged aimlessly backwards and forwards, lively blues came and went, small tortoise-shells—curiously named by cockney boys "cherry-eaters"—sunned themselves on the neighbouring wall. But it was the Red Admiral that would not be denied, *Vanessa Atalanta*, as the books say, the specific name well chosen and recalling the airy speed of the Eastern princess of whom the fable speaks. A fine specimen of the Admiral, measuring nearly three inches when outstretched, alighted on the densely packed florets of some hemp-agrimony. A mere idler might overlook the handsome butterfly as a large tortoise-shell, but the brilliant scarlet band is distinctive. This band starts from the thorax, or mid-division of the body, runs along the edge of the upper wing, bends semi-circularly through the middle of both wings, and finally forms a border to the lower one. Within the zone is an area of velvety black, and outside, in the angle at the tip, are several snowy-white spots. The sinuous edges are gracefully outlined with patches of blue. When the insect alights and closes its wings vertically the under sides show a marvellous mottling of blacks, greys, yellows, reds and ambers. We have here probably an instance of protective colouration, since the hues assimilate well to those of a dead leaf or a piece of elm bark, the elm being a favourite with the Admiral. The insect has also been known to frequent fallow fields, and its wings, when extended, harmonise with the reddish loam; when folded, the general tone corresponds to the shadows cast by the tiny lumps of earth.

The food plant of the caterpillar, an inconspicuous dark larva, with yellow streaks, is the nettle. What a change from this crawling insect to the gaudy Admiral sailing by, and what a long, elaborate preparation for so short a life in the perfect state! The Admiral is very tame; he simply will not leave the hemp-agrimony, or, if driven away, returns again and again. There is some strange fascination in the flower, for I have watched the insect in far-away counties and the bewitchment

was the same. The plant of downy stem and finely etched triple leaflets is all in all. A high authority says that butterflies are among the most highly developed insects, that they love red and white blossoms, and that red flowers are the most complex in their organisation.

I could have caught my Admiral several times over, but cheerfully forbore. The specimens at South Kensington supply all that is necessary. Gone are some of our rarer species, and vanishing are the Heath Fritillary and Purple Emperor. We could ill spare the Red Admiral.

Battersea. WALTER JOHNSON.

REVIEWS AND EXCHANGES.

A Book of the Fields and Woods, being the first book of the North Staffordshire Clarion Field Club. Edited by J. P. Steele. Illustrated by T. T. Blaylock, W. Craigmile, C. E. Dawson, S. Filmore, S. Hartley and F. Rhead. Leek: W. H. Eaton. Price 1s. 3d. post free.

THERE is apparently to be a new departure in Field Clubs. Hitherto they have been mainly assemblies of collectors, and art and sentiment have been very completely banished from their realm of pure science. If, however, to the modern conception of biology, the essential unity of organic life, we add the recognition, with Spencer and Ruskin, that every man must be concerned in the welfare of his fellow men, that social life is organic life and social evolution a part of organic evolution, we work towards an eirenicon of culture along lines hitherto divergent. In this reconciliation we expect that Mr. Lowerison, whose excellent little book we recently reviewed and to whom this work "is affectionately inscribed," has played an important part. Certainly the North Staffordshire Clarion Field Club is to be congratulated on the beautiful little volume which they have produced. The twelve whole-page illustrations and sixteen tail-pieces are gems of poetical draughtsmanship and woodcutting, and the format does infinite credit to a provincial press. Those who have lately been following Mr. Druery in realising the effect of the "point of view" will be interested in Mr. Herbert Barrett's paper on "The Infinitely Great and the Infinitely Small"; and, though another contributor seems unaware that "foraminifera" and "strata" are plural words and that encrinites exist in as great variety to-day as they ever did in the past, it must be remembered that the essays are mainly those of beginners, and that credit must be given for promise and intent as well as for complete realisation of a high ideal. Of the verse contributions we prefer this opening stanza to a poem on "The Daffodil" by J. H. Goring:—

"Oh stately, starry daffodil,
Whose golden trumpet seems to send
A herald note o'er dale and hill
Of Spring's return and Winter's end."

It is a long time since so small a book has given us so great a pleasure. May other Field Clubs follow suit.

Our Native Birds and how to Protect Them and Attract Them to Our Homes. By D. Lange. New York: The Macmillan Company. Price 4s. 6d.

We regret the high price and the somewhat misleading title of this useful little American work. It contains no list or description of American birds, but it does contain a variety of useful information and much eminently level-headed advice to citizens of the United States. Some of the most valuable parts of the book are extracts from the Report of Mr. W. T. Hornaday, presented to the

New York Zoological Society in 1898, on "The Destruction of Our Birds and Mammals." It is startling to read Mr. Hornaday's confident prediction that the extermination of the buffalo (*Bos americanus*), which diminished from 500,000 in 1880 to under 400 in 1883, will be followed by that of the prong-horned antelope (*Antilocapra americana*), the mountain sheep (*Ovis montana*), the mountain goat (*Haploceros montanus*), the "grizzly," the beaver, the elk, and the mule deer; but we can readily accept his classification of the chief causes of decrease in bird-life as "so-called sportsmen," boys who shoot, plume-hunters, the clearing of timber, egg-collecting, chiefly by small boys, the English sparrow, and Italians and others, who devour song birds. Mr. Hornaday's suggestions on this subject are (1) "Prohibit all egg-collecting, except under license; (2) Provide for the extermination of the English sparrow; (3) Prohibit the sale of dead game; (4) Prohibit the killing or capture of wild birds, and of quadrupeds, other than fur-bearing animals, for commercial purposes: (5) Prohibit all spring shooting; (6) Prohibit the carrying or using of a gun without a license; (7) For three years prohibit the killing or capture of any birds, except certain birds of prey; (8) At the end of three years, restrict by law the number of game birds that may be taken by a single individual in one day." These suggestions have been, in the main, adopted by the League of American Sportsmen. The author gives useful guidance as to the attracting of song-birds by planting suitable shrubs, providing nesting-boxes, winter feeding, and protecting the birds from cats and other natural enemies, as to bird and arbor days, &c., and we cannot, we think, do better than transcribe the following hint to Audubon and kindred Societies:—"To compel people desirous of joining one of these societies to write a letter and expend from five to ten cents in order to have his membership fee of twenty-five cents or one dollar reach the proper parties, is very poor business policy. In every town one or more book-stores and other business houses will be found willing to receive dues and issue membership cards. Display in this place the beautiful coloured chart of twenty-six common birds published by the Massachusetts Audubon Society, and on a placard attached to the chart invite people to join. On a table near the chart place some circulars explaining the purpose of the Society. Public libraries would also be good places for this missionary work. There can be no possible objection to this method, which is employed by all kinds of respectable business concerns. The time of people who are interested in such work is generally of some value, and they cannot afford to spend two hours in carrying fifty cents to an out-of-the-way private residence." This is a sample of the practical character of the work.

Notes on Sport and Travel. By George Henry Kingsley, M.D., F.L.S. *With a Memoir* by his daughter, Mary H. Kingsley. Macmillan & Co. Price 8s. 6d. net.

The world is glad to hear anything fresh of the Kingsleys, of Charles, always to us the author of "Water Babies," of Henry, author of "Geoffrey Hamlyn," or of him hitherto known to most as the Doctor of the Earl and the Doctor partnership. This anything is still more acceptable when presented to us in that racy style which the Doctor's daughter, Miss Mary Kingsley, has made her own, and we are tolerably certain that most readers will agree in thinking the first part of this volume in which Miss Kingsley, with the help of many letters, tells the story of her father's life, by far the best. There is a good deal more about sport in the book than about travel—out of beaten tracks, that is—and, though Dr. Kingsley occasionally refuses the name sportsman and reprobates mere wholesale slaughter, the "let's-go-out-and-kill-something" attitude of mind is apparently prominent. "I pray you," says Miss Kingsley, "do not think George Kingsley was mainly a dreamer with a volcanic temper; for in his many-sided nature there were other characteristics—an infinite gentleness with weak things, a vigorous hatred for those who inflicted suffering unnecessarily on man or beast, that came from a sympathy which made him feel the extent of that suffering. This may seem a strange claim to make for a man who was so keen a sportsman, but it is an essential part of the true sportsman. There is as fundamental a difference between a true sportsman and a man who loves inflicting death or suffering from sheer love of cruelty, as there is between either of these and the nervous lady who

shrieks at an earwig and takes to the table-top when mouse or beetle claims the floor."

The Semitic Series. Babylonians and Assyrians: Life and Customs. By the Rev. Professor A. H. Sayce. John C. Nimmo. Price 5s. net.

Though outside the field of this magazine, we feel sure that many of our readers, including those who recently heard a lecture on "Man's first Contact with Nature," will be glad to have from the pen of an expert such as Professor Sayce a handy summary of recent researches into the most ancient of all civilisations.

Received:—*The American Society for the Prevention of Cruelty to Animals: Thirty-fourth Annual Report; Knowledge, Science Gossip, The Naturalist, The Irish Naturalist, Humanity, The Animal World, The Animals' Friend, Our Animal Friends*, and *Agricultural Economist* for February.

NATURAL HISTORY NOTES AND QUERIES.

Hedgehogs.—I have read with interest the paper on "Two Hedgehogs and their Ways," appearing on page 31 of the February number of NATURE NOTES. Some three or four years ago a friend gave me a hedgehog, which I placed in the garden: in a very short time he became quite friendly and would come, when I called him, by a soft sound of whistling. He would readily eat out of my hand, and every evening came to the kitchen door to be fed, and would knock on it with his feet until it was opened. Strangers, however, he objected to, and would immediately roll himself up into a ball if they ventured to touch him. I am sorry to say that my little friend is dead, the gardener, who did not know where his nest was, covered it with a load of soil: we dug him out, but he was stiff and cold.

Westcotes Drive, Leicester. ISABEL W. READ.
February 7, 1900.

Coneys.—In Gasquet's "Henry VIII. and the English Monasteries," vol. ii., p. 188, is the following:—"There is, says a document of the time, a warren of coneys upon the sea banks there (near Furness Abbey) and is worth to be let to farm, 13s." What were the animals? Not surely the coneys we read of in Palestine and other Eastern countries!

E. L.

["Coneys" was, and is, a common name for rabbits; but the coney of Syria, *Hyrax syriacus*, is an altogether different, though externally somewhat similar, animal.—ED. *N.N.*]

Skua Gulls.—When living on the South Coast some years ago, I kept a pair of skua gulls which were allowed full range of the garden and the moats that were full of trout, the feathers of one wing being clipped to stop their flight. I knew my trout were far too sharp to suffer any injury from them, and had no hesitation in giving them free access to the water. They eat anything, from scraps off the plates to earth worms, and were quite delighted with a blind worm as a relisher. A dead rat they swallowed whole. I once threw a lively half-pound eel on the lawn to see how they would tackle it. The eel soon disappeared down one of their throats; but, not feeling comfortable, managed to get its tail out of the bird's mouth and wriggled once more into daylight. It was then seized by the other bird and I saw it no more. These gulls were rather exacting in the amount of food they required, and were not conducive to the neatness of the turf at the water's edge. I was not sorry when they found their way to the sea close by, where no doubt they lived happily ever afterwards.

Market Weston, Thetford. EDMUND THOS. DAUBENY.

Insects and Spiders.—In spite of the numerous works describing the species and habits of insects, I do not know of any good practical book which

gives their life-history, a subject which is far more interesting and valuable. In the case of ants: How do they form new colonies, how long do they live, and how do they pass the winter? Again, with spiders, what is the length of their lives, and if they exist for more than a year how do they manage to eke out existence during the winter months? When do the eggs hatch? Could some light be thrown on these points by some of the many naturalists who contribute to your valuable little paper?

32, *Shaftesbury Avenue, London, W.* PERCY CLARK.
February 9, 1900.

[Much information of the kind you require is given in E. Simpson's "Insect Lives" (Religious Tract Society) and in G. H. Carpenter's "Insects, their Structure and Life" (Dent & Co.), both recently reviewed in these columns. Insect life is so varied that only types can be described in detail. Spiders are not insects. —ED. *N.N.*]

CHILDREN'S CORNER.

HIDDEN BIRDS.

(1) Frederic ran easily, ahead of the others.
(2) The carved work in our church is most rich.
(3) How late do the trains run?
(4) The young hero nailed the flag to the mast.
(5) Off in China bird's nest puddings are a delicacy.
(6) John's brother gave him a dollar knife.
(7) I see a gleam of light in the east.
(8) I spent last Christmas night in Galesburgh, Illinois.
(9) Extra ventilation is needed in our class-room.
(10) Let us now renew our efforts to get subscribers for this paper.

SELBORNE SOCIETY NOTICES.

The Council acknowledges with thanks the receipt of the following:—

Contribution from Wimbledon and Putney Branch.—£5.

Subscriptions over 5s.—Mrs. Brightwen, £5 5s. W. Whitwell, Esq., C. Surgey, Esq., Miss A. Garrett, £1 1s. C. Ricardo, Esq., Miss E. Nichol, Mrs. Silkenstadt, Mrs. Lomer, Mrs. Minet, £1. W. J. Carver, Esq., 15s. G. S. F. Manton, Esq., E. Parke, Esq., Miss de Winton, Mrs. Eden, W. J. Stillman, Esq., 10s. 6d. Miss Marshall, Mrs. G. S. Kempson, Mrs. Litchfield, C. H. Muhlberg, Esq., Mrs. Kingsmill, A J. Hearne, Esq., C. Blore, Esq., J. U. Powell, Esq., Mrs. W. Greenwood, Miss H. Dods, Mrs. Turle, Lady Simeon, Miss Lomer, H. Horncastle, Esq., Dr. Underwood, Miss E. Shadwell, 10s. A. Culshaw, Esq., Miss M. W. Ranken, W. E. Milne-Redhead, Esq., Miss Aentz, 7s. 6d. A. A. Kidson, Esq., 6s.

Donations towards the Reduction of the Deficit.—W. J. Stillman, Esq.; Miss A. Garrett, 10s. 6d. Mrs. Graham, C. W. Ware, Esq., Miss Lomer, 10s. Miss Marshall, E. A. Elliott, Esq., J. F. Carvell, Esq., Miss Slack, J. U. Powell, Esq., Miss E. Grove, E. J. Paterson, Esq., Miss de la Rive, Miss E. Cadman, 5s. Miss Whiting, Rev. A. R. Miles, a Friend, per Miss Hue, Miss Waring, Miss R. Morison, Miss E. Comyns, 2s. 6d.

Selborne Saturday Afternoons:—

March 10.—Kew Museums and Gardens. Assemble at 2.30 p.m., at the Cumberland Gate, near Kew Gardens Station. Guide, Prof. Boulger.

Council Meetings.—Tuesdays, March 6 and 20, at 5.30 p.m., at 20, Hanover Square.

NEWS FROM THE BRANCHES.

Croydon and Norwood.—A lecture on the "Natural History of Croham Hurst," was given by the Hon. Sec. to the members of the Dennett Hall Natural History Society, on January 23. The lecture was illustrated by the lantern under the supervision of Mr. Cooper. On January 25, Mr. E. A. Martin, F.G.S., dealt with "Man's Helpers Amongst Animals," before the children of Miss Thornton's "Sunbeam" Band of Mercy, Thornton Heath. Mr. Councillor Betteridge took the chair, the lecture being illustrated by slides kindly lent by the Humanitarian League. At the end of the lecture prizes were presented for essay-writing following on a previous lecture.

Sale.—On February 17 a lecture was given in connection with the Sale Social Guild by Dr. Graham Renshaw, entitled "The Horse Family and its Ancestors." The lecture commenced with a description of the skeleton of the horse as contrasted with that of a man. The skeleton of *Phenacodus primævus* showed a very early ungulate type, the teeth being very simple, the hoofs small and the tail of considerable length. The gradual evolution of the present day type of teeth and hoof in the horse was then studied in detail, the case of a horse which had supernumerary hoofs being cited as an instance of reversion to primitive ancestral structure. The ancestors of horses were related to a number of large animals, like the *Titanotherium* and others, now only known by fossilised remains, and also to animals which have changed by gradual evolution to the present day tapirs and rhinoceroses. A series of photographs of various rhinoceroses was shown on the screen, the Javan, Sumatran, hairy-eared and square-mouthed species being thus represented. The lecture concluded with a detailed account of the horse family in modern times. The wild asses known to science at the present day were: the Asiatic wild ass, of which two forms, the Kiang of Thibet and the wild ass of Scripture, had been exhibited in captivity; the African wild ass, the parent of our domestic donkey; and the Somali wild ass. The zebras were of several species: (1) the mountain zebra, with small hoofs and general asinine appearance; (2) Burchell's zebra, with larger hoof and much resembling a horse; (3) Grévy's zebra, with long thin stripes on its body; and (4) the quagga, a fine animal which had unfortunately been completely exterminated. The attention of the audience was called to the work of the Selborne Society in preventing the wanton destruction of animal life.

The lecture was fully illustrated by the lantern, and the slides included several interesting representations of the recent successful domestication of Burchell's zebra in the Transvaal, the animals having been harnessed to light Cape carts.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 124. APRIL, 1900. Vol. XI.

SELBORNIANA.

Annual Meeting and Conversazione.—Thursday, May 17, is the date fixed this year for our annual meeting and conversazione. An official notice to that effect appears at the end of this number, but more particulars will be given later. The President has promised to take the chair, and, as country members have so few opportunities of meeting those belonging to other branches, it is hoped that this gathering may be as representative as those of past years.

Golder's Hill.—We have received the most satisfactory Report of the Hampstead Heath Extension Scheme for adding Golder's Hill to Hampstead Heath, presented to a meeting of subscribers on March 21. The Report, which is illustrated with three views and a map, shows a clear balance of £245, which it is recommended should be invested towards acquiring further desirable additions to the Heath.

The English Sparrow in the United States.—"J. B." writes:—"May I protest against Mr. W. T. Hornaday's suggestion—as quoted in your last issue—that sparrows should be exterminated? Would it not be a cowardly and mischievous act, even irreverent, when we remember Who it is that we are told regards even them."

Edinburgh Association for the Protection of Wild Birds.—Mr. W. A. Nicholson ("Goldfinch"), of 39, Tower Street, Portobello, N.B., writes:—"Owing to the wanton and continued persecution of our wild birds, an Association is being formed in Edinburgh for their protection. Our wild birds are slowly but surely decreasing, and the need of such a Society is great. Our endeavours have been so far successful, but many

more names will be required before a meeting of those interested can be called.

"The public mind is at the present time taken up with the war now raging in South Africa, and rightly too; but surely the humane ought to give a little thought to the war which is constantly being waged against the birds at home. We ought not to forget our duty to the dumb creation.

"I venture to make an appeal through your columns for donations to carry on the work of starting such a scheme.

"Ladies and gentlemen desirous of joining or helping us in any way are requested to communicate with me, when I shall be glad to furnish any information desired."

ARCADY.

CANON RAWNSLEY writes, on March 12, "The starling woke me this morning with the cry of 'Arcady! Arcady!' and when I read of the battlefield of Driefontein the following little poem suggested itself. In Cumberland a man who was crying for death would say, 'If ah cud die!'"

AT dawn beneath a painless sky,
With triple note remembered well,
I hear the merry starlings tell
Of "Arcady," of "Arcady!"

At dawn where wounded soldiers lie,
I hear a voice remembered well,
In accents of the Cumbrian fell,
"If ah cud die! If ah cud die!"

Oh, birds of happier destiny,
For here is heaven, but there is hell.
When shall sweet Peace return to dwell
And all the world be Arcady?

NATURE NOTES WITH PENCIL AND CAMERA.

BY THE EDITOR.

IN our last number, in reviewing "A Book of the Fields and Woods," attention was called to the beautiful specimens of the wood-engraver's art with which that little work is illustrated. By the courtesy of the editor, Mr. J. P. Steele, we are now able to reproduce two of these. The first, "The Nuns' Burying-ground at Cobridge," by Frederick Rhead, accompanies a poem by the artist, the two following verses of which explain his idea :—

"Here, where the tiger-lily flames,
Beneath the rhododendron vistas,
Serenely lie the gentle dames—
Repose in peace the placid sisters.

* * * * * *

"Perchance, on fragrant summer nights,
A dim procession faintly lingers,
That follows ghostly taper-lights,
And tells its beads with spectral fingers."

THE NUNS' BURYING-GROUND AT COBRIDGE.

The other, a simple little tail-piece, is by the same artist. No words are needed to insist on the assistance such work as this is towards a wider sympathy with Nature. A few years ago the complaint was often made—and it might be made still—that

A Tail-piece.

Hedgehog.

Startled.

there was in the country much microscope-power running to waste, that many owners of microscopes used them merely as toys, and lost many an opportunity of turning them to the advancement of science. Assuredly to-day the same may be said with reference to the photographic camera. The Messrs. Kearton and others have shown the way; but what a small proportion do the really instructive negatives of living plants or animals, of microscopic slides, or of interesting geological sections, bear to the "snapshots" of the merest transitory concern! By the kindness of Mr. Ernest Bell we are able to re-print from the *Animals' Friend* the two amateur photographs of hedgehogs, as an example of what might be done more often by the owners of cameras.

HOW SCENERY IS MADE.

IV.—Sand and Sand-Rocks.

WE have seen how sand is made, either on a beach or by rivers. If time be allowed, the accumulation, layer after layer, becomes solidified, and may form a great massive rock. Fresh sand is very incoherent, and requires some binding material to make a rock; so that if iron-rust (oxide of iron) be present, this will cement the grains together. An old iron anchor which has lain at the bottom of the sea may sometimes be seen on a beach thickly covered with sand and pebbles cemented to it. Another common means of consolidating sand is lime.

When sand has become sandstone, it is often red or yellow in colour. This is due to the presence of iron. It usually splits more or less readily, corresponding to the layers of which it was composed, and a feature sometimes seen is what is called "ripple mark," and even depressions made by raindrops. As the tide goes down it always leaves a rippled surface, and if a heavy shower of rain occur, the direction of it can be told by the circular indentations all being inclined in one way. Now, when sandstone rock is quarried, on the stones being split for making paving- or flag-stones for our streets, the ripple-mark sometimes reappears on the surface, though laid down, it may be, hundreds of thousands of years ago. Paving-stones can often be seen to flake off in patches showing several thin layers on the surface. These correspond with the successive layers of sand deposited at each tide. The present writer recalls an occasion when he saw a vertical and flat sandstone surface some 150 feet high, "ripple-marked" all over. It was in the Eifel district, west of the Rhine. Stone quarried at Horsham, in Sussex, and used in the villages around, often shows it.

Hastings rock is composed of a pure white sandstone, and is

easily cut out, as the cementing process is in places very deficient.

In Warwickshire and Herefordshire there is much sandstone, coloured red; whence these two have been called by geologists the "new red" and "old red" sandstones respectively. Houses and St. Mary's Church, in Warwick, have been built of it.

Sandstone countries have no very special features. Being, as a rule, comparatively easily denuded by water, we get flat or undulating country, as in Warwickshire and Sussex and Herefordshire, where there are deep ravines, such as that of the river Wye; so that the scenery may be in parts very fine.

If the sand contain small pebbles it becomes gritstone, of which there is much in Yorkshire. This is used for millstones, and therefore it is called "millstone grit."

A curious quartz-pebble bed, of which only solidified fragments are now found about St. Albans, consists of small rounded flint stones embedded in a fine silicious "matrix." It has been called "plum-pudding stone." In other words, the sand was ground down to a powder like meal. A similar bed, only perfectly incoherent and nowhere solidified, occurs in a quarry near Chislehurst; while a huge block of pudding-stone, probably transported there by an iceberg, stands in the village of White Notley, Essex.

If sandstone and gritstone undergo great compression and heat, the grain and pebbles become semi-fused and consolidated, constituting quartz-rock. Bands of this, in which the pebbles are still sometimes distinguishable, occur among the slate-rocks of Wales. In some of the coal-mines they sink shafts through thick beds of sandstone, which originally overflowed the forests and swamp-vegetation, now turned into coal and so buried it. Sometimes trees decayed away, leaving great pipes in the sandstone beds; subsequently becoming filled up and hardened, they took the form of the original trunks of the trees. A large specimen may be seen standing in the grass at the east end of the Natural History Museum, South Kensington.

The chief mineral in sand is quartz, and the most important use of sand is for making glass, since quartz will readily fuse with potash or soda. The old story says that some sailors, using the herb salt-wort for kindling a fire on a beach, found some "glass" left behind. Such was the original discovery of the means of making glass. Quartz in various forms is probably more or less familiar to the reader, such as quartz crystals or "rock crystal," from which the so-called "pebble" eye-glasses are made. This has no advantage over pure glass, except that it will not chip. Of gems there are amethyst, coloured violet with manganese oxide; cairn-gorm, yellow or brown, coloured by iron: opal, cornelian, chalcedony, agate and onyx are "hydrated" banded forms, while cat's-eye owes its peculiar flashing appearance to the presence of filaments of asbestos.

GEORGE HENSLOW.

GRASS-SNAKES.

THE Grass-snake, or Ringed-snake, unfortunately belongs to a race which, as regards most of its members, deserves extermination. Perhaps the creature is confounded with the poisonous adder; at any rate, every ignorant labourer tries to slaughter it, and most people loathe it. Some, however, have braved general opinion, surmounted other obstacles, and domesticated this reptile. Perhaps the snake is more naturally associated with southern than with our fitful skies; it certainly enjoys warmth, and disappears on cold days. When the sun of September loses power the snake retires into the bowels of the bank, or into some other recess, where it spends the winter in deep slumber, from which the warm weather at the end of April again rouses it. Then it may be seen basking on a sunny bank or heard in the dead stuff at the bottom of a hedge, where it makes a rustling like that of no other thing. It is scared by a person's approach, and wriggles away so fast that, if you wish to catch it, you must not hesitate. It is then well to have ready a convenient bag. To carry in one's hand a newly-caught snake is very unpleasant, because in its fright it emits such a horrid effluvium as would disgust any but ardent naturalists, and would, I venture to say, have left Tobit, had he tenanted a cottage in English fields, at no loss for a means, just as efficient as those he used, to scare away the evil spirit.

Nor is the progress of domestication encouraging. The animal answers all advances with furious hisses and menacing gesticulations. Once a large grass snake flew at my hand, from which it drew just a speck of blood; trifling as was the incision —too trifling to be felt—there can be little doubt that even this, made by some of the tribe, might have been followed by a serious illness. But in a few days your ward grows tranquil, gives over hissing, loses other offensiveness, and may be held in the hand while it twines its body round the fingers, at the same time darting in and out its tongue.

We now have opportunity for closer examination. Certainly the animal's appearance is showy. Such are many poisonous flowers. Might we not therefore doubt the grass-snake's innocence? Its body is completely clothed with scales, grey inclining to tawny, which on the back are granular, but broader lower down, where they are met by polished semi-rings sheathing over one another, and usually mottled black and milky white, though they are sometimes uniformly black. Of these there are about one hundred and seventy. The back is not marked conspicuously, and here seems to lie the difference by which this snake and the poisonous adder, or viper, may be most easily distinguished; for along the back of the viper there runs a zig-zag chain of black lozenges. Above the black flank-slits of the grass-

snake, though not quite corresponding, are two sets of smaller dashes of black which, with the others, make a ring-like appearance, and hence doubtless comes one of its names. The throat is ivory-like, the head brown; and at the back are two daubs, yellow and black, two on each side. The eyes have hazel irides, are lidless and susceptible of turning only through a small angle. The yellowish cheeks are striped with black, which increases the expressiveness of the features. The cloven tongue of jet is protruded through an orifice in the lips, withdrawn into a fleshy sheath fixed in the lower jaw, and rooted in the throat. When active, the snake darts out, wags and withdraws its tongue almost every moment, a circumstance which undoubtedly invokes suspicion, especially when the snake keeps this member steadily out (as it sometimes does) and keeps the sharp, black points in different planes, thus giving it a barbed, steel-like appearance. As a matter of fact the tongue terminates in two harmless hairs. The jaws are somewhat bony and rough, this being their worst feature. The snake, therefore, has some reason for making the most of theatrical bravado, and succeeds in scaring most people, though undoubtedly to its own detriment.

A snake's motion deserves notice. The construction of the backbone facilitates lateral flexion, and thus enables the snake to tie itself in knots. In its favourite posture the snake is coiled, and you have only to touch its tail when it is immediately hooked round your finger. If the snake is startled on a bank when partly hidden, the marking of its sides makes it resemble a revolving cogwheel. It moves by pressing its ribs against the ground or what may be thereon, and when that is perfectly level by drawing its body into curves, but never by contracting it into a lump as does a worm. On uneven ground this motion becomes so rapid that capture then requires an alert hand.

A cage for snakes should be of ample extent. It should be ventilated by perforated zinc, but not so much as to tempt capricious weather, nor in such a way as to make escape possible, in effecting which your prisoner is apt enough. Indeed, so ungrateful are snakes that, while exercising one on the open ground, care is needed that in its path lie no holes or other places of shelter into which it will inevitably creep and be lost. A cage should have an extensive skylight, because its occupants require to bask in the sun. It should have a den of earth for the snake to lodge in at night, or during ungenial days, for the snake is prone to take shelter and frequently crawls into one's sleeve. Special care is needed to provide warm quarters for a snake's hibernation at the end of September. A den should be made in a box of earth and be stuffed with cotton wool, having, of course, a narrow but clear passage leading to it. Neglect of these precautions may, I believe, permanently injure a snake's health. There must also be a cage to receive frogs and toads. These creatures are swallowed alive by the snake in its natural state; but as the latter appears not to refuse them when dead, it might

be more humane to expeditiously deprive them of life, if it will then touch them. Nor should they be larger than twice the size of its head, although, owing to the expansive power of its throat, it can conveniently swallow prey of that size. As a matter of course, its visage becomes frightfully distorted by such large mouthfuls. So far, too, is this snake from having a moderate appetite, as some aver, that it will swallow six frogs in succession. The frogs must, of course, when alive, be supplied with water, and so must their devourer be. The serpent's appetite for frogs seems long to have been familiar, and those who have read Pilpay will remember how one of his ingenious fables turns upon this circumstance, which has likewise been utilised by poets.

Perhaps snakes have little of what may be called character. Yet few wild animals can be tamed in so short a time, and age makes little difference. Snakes, however, seem to have a rude intelligence. I kept a large snake, which more than once crawled down from a box of earth placed upon a chair, went about the room and afterwards climbed back into its den. Snakes also seem social. If more than one are placed in a box, they will shortly be found heaped together ; and this appears not to arise from other instincts.

The appearance of the species before us varies considerably in different individuals. Of three grass-snakes I have, one is decidedly dusky : in another the black parts are unusually vivid, as indeed are the rest of the markings; and the third inclines more to yellow, has a plethoric throat, but the black markings less conspicuous. The length of grass-snakes also varies, but they are not commonly longer than three feet. On the other hand, the viper never exceeds two feet.

Curiously enough, the snake sheds its skin at least twice a year. The slough, of a dirty transparency, may frequently be found entire, either in a crack of the ground or entangled among sticks. The skin splits about the head, and in divestment is turned inside out, leaving what crawls forth attired in Sunday-best, and undoubtedly glad to have finished the business. A snake's eyes, usually so clear, become soapy blue before a change. The coverings of the eyes come off with the skin, and then resemble miniature spectacle-glasses, highly concave. At such times the snake requires a few sticks, by the help of which it divests itself. A snake once performed this task merely by aid of a broken saucer. Sometimes a little of the old skin adheres to the tail, and then the snake feels grateful to you for peeling the rest off, although, if you do this clumsily, it may show its displeasure by a hiss.

Snakes' eggs are white, and perhaps larger than a sparrow's. Their flexible shells are frequently found on a manure hill, conglomerated, after their contents have been hatched. Baby snakes deserve notice. When only eight inches long they twine their bodies into a coil which might rest upon a penny piece,

are vain of their tongues, emit effluvium and even hiss, while their markings are those of their parents in miniature. What their food may be it is hard to say. Certainly no frogs could be found small enough for the gullets of such tiny creatures.

Such characteristics I have noted in the grass-snake, as the result of two years' acquaintance with it. My neglect of past opportunity to scrutinise the viper, also found in many parts of England, forbids me to give anything like an exact description of that pest. I cannot too strictly caution a person against capturing, at least directly by the hand, any snake until he is quite sure that it is harmless. The bite of an adder causes at least a very severe illness. As the adder is not prone to water like the other, a snake found on a ditch-bank by a meadow, or in a damp place, would be less likely to prove noxious than one found, say, on a heath or rocky place.* To my certain knowledge grass-snakes are pretty common in that part of Berks which borders with Oxon. In this district at least it is not spared, where, I was told, it is not so frequently found as in former years. Verily an innocent creature falls beneath the anathema with which its race is branded.

J. W. Cole.

BIRDS OF NORTH-EAST LONDON.

THE records, past and present, of that portion of the metropolis extending from Stoke Newington in the north, by way of Stamford Hill and the Lea Marshes, to Stratford in the east, having regard to the fact that the whole area lies within a radius of four miles from the City boundary, are, to say the least, somewhat remarkable. Out of the 384 species which according to Mr. Howard Saunders' latest computation ("Manual of British Birds," second edition, April, 1899) represent our total avifauna, over one-third are included. A glance at a map of the district will, in a measure, account for this, by showing that it comprises a vast expanse of marsh land and water having direct communication with the open country, even to the sea coast. Mr. J. E. Harting when writing a few years ago on the birds of Hampstead, referred to "the absence of any considerable pools, and the distance from any river," as sufficiently explaining the scarcity of waterfowl in that otherwise favoured locality. In this particular respect north-east London excels. And yet, curiously enough, in most of the books referring to London birds, the locality has, to a considerable extent, been overlooked. In many instances the respective compilers have gone far afield for examples which might have been given near at hand.

* This is not altogether a safe rule, for adders do sometimes frequent marshy ground.—Ed. *N.N.*

Stoke Newington—taken as a starting point—although distant but little over three miles due north of the Royal Exchange, and intersected by the four miles' circle from Charing Cross, still retains on its western border some of the characteristic features it possessed a century ago when it was a small rural village, and formed a favourite place of abode for the wealthy citizens of the time. Many of its ancient buildings, grey with age, still remain. Of these the old church of St. Mary, standing side by side with, and overshadowed by, the lofty spire of the modern edifice known as "the new church," deserves mention from the fact that its picturesque graveyard is the burial place of Mrs. Barbauld and her brother, Dr. Aikin, the joint authors of that once famous work "Evenings at Home," in which appeared the charming little story of "Eyes and no Eyes; or the Art of Seeing." Probably nothing has ever been written which has done more to encourage a love of Nature than this simple narrative.

Clissold Park, consisting of fifty-three acres, partly encircled by the New River, immediately adjoins the two churches, to which, with its fine old trees, it forms a charming background. Here the mistle thrush, song thrush, blackbird, starling, chaffinch, redbreast, wren, great titmouse, coal titmouse, blue titmouse, hedge sparrow, and of course, the ubiquitous house-sparrow, are more or less common and, with the exception of the coal titmouse, breed. Carrion crows are often seen. Three years ago a pair commenced building, but were disturbed and forsook the nest. A few months later a hooded crow was identified flying across. Rooks are nearly always about, but do not now breed nearer than Tottenham and Walthamstow. Attempts have recently been made to establish a rookery in the park. Young birds with pinioned wings have been introduced, artificial nests constructed, and other means adopted, but up to the present time without success. The jackdaw once or twice has nested in holes in the trees, but usually takes up its quarters in the vicinity of the old church. All through the year the wood pigeon, and in summer the spotted flycatcher, are familiar sights. Both birds nest freely about. By the rushy margins of the islands on the miniature lakes the moor-hen usually brings forth three distinct broods every season, the first batch assisting in the charge and feeding of the later arrivals. The late Bishop Stanley, it will be remembered, long ago, called attention to this interesting habit. The little grebe or dabchick forms her watery nest close by, but not always with a satisfactory result. Great animosity is displayed towards the species by the moor-hens and tame swans. The nest is often destroyed, and its lawful occupants driven away. The coot is an occasional visitor to the waters, and the curlew has, several times during the last two or three years, been identified passing over. This year (1899) a pair of tufted ducks have sojourned there, and in August, 1898, a landrail was discovered near. Rats infest the islands, and in the

breeding season commit great havoc among the eggs and young birds. The kingfisher is seen once or twice a year, but generally along the banks of the New River. Before the park was drained, snipe were often flushed on the low-lying ground in the winter months. Goldfinches, linnets, greenfinches, skylarks and yellow-hammers are attracted in severe weather by the food then provided for the birds by the London County Council. At such times the redwing and fieldfare are generally to be found. The cuckoo comes every spring, and is generally preceded by the wryneck. Inasmuch as young cuckoos have been found in the neighbourhood, it may be assumed that they have been reared not very far away. In the twilight of the summer evenings a glimpse of the barn owl may sometimes be obtained, noiselessly flitting through the trees, from whence the mystic churr of the nightjar has been heard. The house martin is plentiful from May to September. In 1895, under the eaves of four consecutive houses in an adjacent road, there were no less than eleven nests. Sand martins generally appear in numbers before migration. Swallows have nested for the last two years at the old mansion in the park. The swift is, of course, less common. Not infrequently the kestrel and sparrow hawk are observed, and four years ago a buzzard was recorded. During the same year a jay appeared. Annually in spring the chiff-chaff, whitethroat, lesser whitethroat, wheatear, blackcap, sedge-warbler, garden-warbler, willow wren, stock-dove, bullfinch and sandpiper; in summer the redstart, tree pipit, meadow pipit and pied and yellow wagtails, and in winter the tree creeper and the grey wagtail usually visit the place.

Another favourite resort of birds in the district is Abney Park Cemetery, where quietude reigns supreme, and the bird-life is in many respects identical.

Barely a stone's throw beyond Clissold Park are the extensive works of the New River Company. From its conspicuous position the quasi-castellated pumping station forms quite a landmark. Beside it, on the one hand, are huge but bare filtering beds, extending nearly to Finsbury Park; on the other are the reservoirs stretching away to Stamford Hill. These two magnificent sheets of water, which stand very high and in parts are eighteen feet deep, were completed in 1833. In their early years, surrounded by green fields, they were the resort of the rarest waterfowl, including even the great crested grebe, the red-throated diver and the cormorant—several specimens of the latter having been taken here. Every winter wild duck haunt the spot, and during continued frosts remain for weeks together. At these times skeins of wild geese fly across, but at such a height that it is impossible to distinguish the species. In December, 1892, a scaup-duck was recognised, but quickly went away. Herons from Wanstead Park are constant visitors in the summer months. Two or three together may often be perceived soon after daybreak gravely stalking on the shallows. The

common gull and the herring gull are casually visible in cold weather. A small flock of fourteen black-headed gulls came in the month of August, 1894—an unusual circumstance at such a period of the year. At migration times, under cover of the darkness of the night, countless numbers of birds pass over, allured by the lights of London and the gleam of the water. Their presence then is only betrayed by a faint cry at intervals from out of the obscurity. The nightingale has been heard again this spring (1899) in the shrubberies around the reservoirs, after a silence of over ten years.

From the high ground at the rear of Stamford Hill a glorious panorama opens out. Abruptly descending lies the Lea Valley with the enormous reservoirs of the East London Water Company and a confusing network of streams. On the distant horizon Epping Forest stands out boldly. Surveyed from this bird's-eye point of view, the appearance from time to time of so many rare avian visitors is easily understood. By the reservoirs the mallard breeds every year, and during the past winter woodcock and snipe have been repeatedly put up. The common tern, kittiwake and oyster-catcher are seen at times, and the lapwing and even the golden plover are by no means uncommon. The reed warbler is observed nearly every summer, and incidentally the ring-ouzel. In autumn the siskin and lesser redpoll arrive, and are followed by the golden-crested wren. A shore-lark, an exceptional visitor, was caught here in October, 1881. Another specimen was taken at Hackney Marsh in March, 1865.

Following the course of the river downwards, after passing Lea Bridge and the East London Waterworks—which far exceed in magnitude those of the New River Company at Stoke Newington—is Hackney Marsh, consisting of 337 acres, opened for the public benefit by the London County Council in 1894. Primarily it is now used for cricket and football. Certain improvements have been effected, including the drainage of the land, the filling up of ditches, and the levelling of the surface. In a general way this is doubtless an advantage, although hardly so in an ornithic sense. Formerly, whilst parts were practically impassable in even ordinary wet weather, floods were not exceptional. Thus the water birds were encouraged. The widgeon, teal, pochard, shoveler, pintail and golden-eye have all been taken here, as well as the common scoter. The partridge used to breed on the Marsh, and the red-legged partridge and the pheasant were often seen. A wood sandpiper was shot in August, 1885, and a stone-curlew in December, 1889. Five goosanders flew over in November, 1892, and all were killed. In recent years the corn bunting, snow bunting, reed bunting, brambling, whinchat, marsh titmouse, puffin, golden oriole, dipper, magpie, quail, green sandpiper and the red-backed shrike have been noted; and not far away the hawfinch and the lesser spotted and green woodpeckers. To this list may be

added the blue-headed yellow wagtail reported by Yarrell as taken as far back as April, 1837.

By the side of the river in the centre of the marsh, completely isolated, stands the White House, an unpretentious inn, where for many years existed a large collection of stuffed birds taken in the immediate vicinity. Notably among them was that extremely rare bird, the cream-coloured courser, shot in 1858. The British Museum offered £25 for this specimen, but it was refused. Other scarce examples included were the smew, ruff (and the female bird, the reeve), dotterel, ringed plover, greenshank, redshank, water-rail, little stint, sanderling, black tern, sooty tern, whimbrel, waxwing, great grey shrike, Lapland bunting, jack snipe, dunlin, great black-backed gull, and the short-eared owl. Remnants of this collection are still exhibited at the house, but the specimens are mostly in a dilapidated condition.

Contiguous to Hackney Marsh, on its further extremity, are Stratford Marshes, which in times gone by have had a great reputation for birds. In January, 1889, a wounded peregrine falcon was picked up. A flock of grey plover were met with in the spring of 1890, and one was killed, and in the winter of the same year a bearded titmouse was shot. A grey phalarope was taken in 1891.

Beyond Stratford Marshes, that is to say outside the four miles' limit, but at no great distance away, many other scarce birds have been recorded. An immature specimen of the Mediterranean black-headed gull obtained at Barking Creek in 1866, is exhibited at the Natural History Museum. A flock of Pallas's sand-grouse appeared at Barking-side in 1888, and several were shot. A great snipe was killed at Forest Gate in 1889, and a hobby at Plaistow Marshes, about the same period.

From time immemorial the Lea Marshes have been the rendezvous of east-end sportsmen. A few good shots attained a local reputation, but the great majority were of the cockney tyro order. The present writer—who has known the place intimately for upwards of forty years—has on several occasions undergone his "baptism of fire" from the spent bullets of these latter reckless gunners. Shooting, however, is now entirely prohibited within the jurisdiction of the London County Council, and the Wild Birds Protection Acts are enforced as far as possible in other parts.

During recent years the Lea hereabouts has suffered terribly from sewage pollution, as well as by the enormous intake of the water companies above Tottenham, which reduces the stream to a minimum.

H. CHIPPERFIELD.

CROSSING THE ST. GOTHARD.

FAR, far on high the stately fir trees climb
In slow receding column towards the sky,
And thick upon them hangs the brilliant rime
Of cold encrusted flakes, which whirl and fly
Athwart the hills, and gather in the rifts
And crannies of the frowning rocks below,
Stern, black and cruel, as the cloud which lifts
Its head beyond yon shaming peak of snow.
The driving mist wreaths steal across their frown
Veiling its harshness; then again they break,
And lo, the snow-fed falls come crashing down
In low, melodious thunder towards the lake,
Which, fed by rushing river,—rippling rills,
In jade-green grandeur lies among the hills.

Lower we go, and lower yet,—our way
Grows clearer, till the snow is almost gone,
And through the icy covering, sweet and gay
The cowslips push their heads towards the sun.
Still lower, and the fields are golden green,—
The willows by the stream are blushing red,
And here and there a bird of sprightly mien
Trips gaily, jerking tail and nodding head.
Pale primroses and violets star the grass
Between the bare poles where the vines *will* be,
And in the meadows, maiden Spring we pass
Touching with tender fingers bough and tree,—
We almost see her, as beneath our gaze
In rosy veils the almond she arrays.

M. L. A.

April 2, 1898.

REVIEWS AND EXCHANGES.

Flowers of the Field. By the late Rev. C. A. Johns, B.A., F.L.S. Edition twenty-nine. Edited by G. S. Boulger, F.L.S., F.G.S. 8vo. pp. lii., 626. With numerous illustrations. S.P.C.K. London. 1899. Price 7s. 6d.

THIS is a new book in an old setting. For many years Johns' "Flowers of the Field" has been the primer of English botany, and has done much to instil and foster an interest in our wild flowers. The publishers have done well in securing the services of a competent editor to bring the book up to date. The term editor is used here in a large sense, for though there is no alteration in the plan of the work, the text has, in the words of the title-page, been "entirely re-written and revised." A great improvement is to be found in the Introduction, from which the historically interesting, but out of date and unscientific Linnæan

arrangement of the genera has been omitted, while the useful chapter explaining the terms used in the descriptive portion of the book has been much enlarged. Those, however, who still prefer to count the stamens and styles will find the sexual system at the end of the book, where it occupies a few pages in the form of an index.

A mark of up-to-dateness is the replacing of certain well-known names by strange ones, in accordance with the law of priority of publication. It is dangerous to condemn adhesion to rules, but one views with mixed feelings the appearance of these unfamiliar names in a popular work on British plants. The mischief is that they are so often fugacious, the recognition of some ancient book or an alteration of the limits of some other genus necessitating a second change. Where alterations have been made the more familiar name should also have been quoted. We think too that the authorities for the names should have been given, though unfortunately in the present unsatisfactory state of botanic nomenclature an author may never have seen the plant for the present name of which he has made himself responsible.

The amateur student who has the courage to attack sedges and grasses will be glad to find these two last families of the seed plants now included in the volume, though we fear he will not get get much help from some of the figures, which, especially in the genus *Carex*, are very poor. Perhaps in a later edition the publishers may be persuaded to replace some of the old and much worn blocks. We make these various suggestions because we think their adoption in a future edition would increase the value of this very valuable little book.

A. B. RENDLE.

Missouri Botanical Garden. Eleventh Annual Report. St. Louis, Mo., U.S.A., 1900.

This volume is even more sumptuous than its predecessors. Fifty-eight plates, four of them coloured, and over 150 pp. of letterpress, mostly of a strictly botanical character, form a worthy testimony to the value of endowment of research—at least in St. Louis. The chief papers are on the diseases known as "peckiness" and "pin-rot" in *Taxodium* and *Libocedrus* respectively, on Agaves, on American species of *Euphorbia* of the section *Tithymalus*, with 42 plates, and on *Lophotocarpus* and *Sagittaria*.

The Classification of Botanical Publications. By William Trelease. (Reprinted from *Science* for November 17, 1899.)

This paper deals with the cataloguing of botanical works on the decimal system, and should prove helpfully suggestive to librarians.

Received:—*Board of Agriculture: Leaflet No.* 62. The Pear and Cherry Sawfly (*Eriocampa limacina*, Cameron). *The Victorian Naturalist* for January; *Knowledge*, *Science-Gossip*, *The Naturalist*, *The Irish Naturalist*, *Humanity*, *The Animals' Friend*, *Animal World*, *Our Animal Friends* and *Agricultural Economist* for March.

NATURAL HISTORY NOTES AND QUERIES.

Polecats or Fitchets.—I should feel obliged if any readers can say whether these animals have become extinct in Worcestershire, Warwickshire, or other counties? They used to be met with here fifty years ago occasionally. I met with an animal's mark in the snow a month ago that I was not sure about: it might have been a squirrel's, but I think it was a polecat's. I reckon to know every animal's mark I meet with—foxes, badgers, dogs of various sizes, cats, hedgehogs, stoats, weasels, hares, rabbits, rats, mice (various), squirrels, and

moles, the latter seldom venturing on surface snow, and leaving a peculiar trail. But few people apparently understand these marks. A neighbour informed me a fox had crossed his field. I went and examined it, and instead I found it was a *long-tailed field mouse*.

The Wren's Nest, JAMES HIAM.
Astwood Bank, Worcestershire.

Instinct in Birds.—In the current number of the "Magazine of the Selborne Society," there appears a short but interesting note of an observation made by Mr. E. G. Wood, on some of his caged American blue birds and canaries, in which he describes their alarm felt, and the symptoms of fear evinced by them on the detection in the immediate neighbourhood of their keep, of kestrels.

But as this note appears under the heading of "Instinct in Birds," it at once recalled to my mind an incident which, if not exactly similar in circumstances, may be opportune yet for some reflections on the term "Instinct," to which I myself had recourse when trying to ascribe the necessary explanation to the following case.

A few years ago, when in Australia, I bought in the market a young galah (*Cacatua roseicapilla*). The bird was brought up and kept in a cage generally indoors, and grew quite confident in its surroundings and used to the other domestic inmates. On one evening, however, after about two years, for then unaccountable reasons, it suddenly betrayed all the signs of great fright and alarm by trembling and general agitation. I at once looked about for a possible stray cat or other unwelcome intruder, but failed to discover any such object of natural danger to a bird. This paroxysm lasted a considerable time, and then it would cease equally mysteriously. Upon its being repeated again, I tried to follow the direction of the bird's scared looks, and then, to my astonishment, I discovered the imaginary foe. My wife, while reading in a book, had on this occasion for the first time made use, as a mark, of a fragment of the dried skin of a snake which had been about somewhere. Whenever then, she accidentally put it out of sight the bird becalmed itself, and *vice versâ* was thrown into that state of alarm on its re-appearance. But what was really noticeable was that the bird never became reconciled with this object for the four years it lived. It died by having contracted fowl-diphtheria.

I very naturally attributed this circumstance to "Instinct" purely, and no doubt I was well entitled to be content with this opinion, when later I purchased another young bird of the same species as soon as they made their appearance in the market, in December.

But, strange to relate, this bird at no time evinced the slightest sign of discomfort on the sight of the dreaded object referred to, although it is still in use and close proximity of the bird to this day. It might be argued that this may be due to individual disposition, but on comparing notes since between this last bird and its predecessor, I certainly came to the conclusion that this must be undoubtedly a case of "parental tuition, or a nest-lesson," which the first bird had received, when I consider now that I bought it late in January, and it was older by a month at least than the second, which was little more than a helpless nestling when I procured it. It is clear that it never could have had an opportunity of getting acquainted with the dangerous nature of a snake, and knew nothing of their existence.

I do not know whether or not similar conditions appertain to Mr. Wood's cage-birds as regards their rearing in cages or being captured, which might throw further light on the subject; but, at any rate, I am very thankful to him for the opportunity his note has afforded me in mentioning an observation which in all probability I should have forgotten.

45, *Coniger Road, Fulham.* J. J. E. DEGAN.
January 8, 1900.

The Coming Migrants.—Next month will be a busy time with the arrival and nesting of our summer migrants. May I ask others to keep diaries

of first appearances as I have done for years, and recorded them in NATURE NOTES. How are the young people to understand the notes, &c., of *each bird*, to be exact in recording arrivals, without teachers? That is a question I have often thought about. For instance, is there anyone at Selborne to take up and record arrivals, &c., as Gilbert White did?

J. HIAM.

Curious Homes for the Birds.—Last spring I accommodated three pairs of robins with ordinary empty tomato tins to build in, which I placed in various positions on the premises, and all were occupied, and about eighteen young ones were reared. That was the first round of nests, and robins usually have three broods, unless the cuckoos take to lay in, or rather to place their eggs in. I had a redstart's nest in a tea-kettle, a blue-tit's in a coffee-pot, a great-tit's in a teapot, a fly-catcher's *on* a tomato tin (not in) and host of others in various devices of accommodation.

The Wren's Nest,
Astwood Bank.

JAMES HIAM.

Woodcocks.—It is affirmed that those breeding in the British Isles in February and March *all* leave and migrate south in the summer or towards the end of it, and return here very early in the spring. They thus, if this is true, go free as far as any of this flight being shot in these Isles. It is further affirmed that the first birds that are shot here in August are the first arrivals of the flight that come here across the German Ocean from Scandinavia and that light on our east coast, and then spread themselves over England, Scotland, &c. These all disappear and migrate back again to the northern regions in the spring to breed there. Thus, if this view is correct, we have one flight—the one that breeds in the British Isles, arriving here when the other is leaving and taking its departure shortly before the first arrivals of the other flight arrive on our east coasts.

Opposed to this view is the fact that in parts of Scotland the birds, always found single at other times, are found and shot in August four and five together; and their nests are to be found on the ground, if one looks for them. From this it might be concluded almost to a certainty that the *first* birds of the season are *not* the first arrivals of a new flight, but those that have nested here and their offspring. Which view is correct, and what are the authorities on the point that all the birds that breed in these Isles go clear away in summer or towards the end of it?

X.

Hoopoe in South Devon.—On returning from some visits in my parish on Monday last, March 5, I was informed by two of my daughters that they had been delighted that same afternoon by the sight of a beautiful hoopoe (*Upupa epops*) which was walking about on a path between our vicarage and the church, and was very tame, so that they had the opportunity of watching it for a long time. On further inquiries I found that it had been in our garden earlier in the morning. The next day one of my daughters and a friend saw it again, near the same place, and yesterday morning she came to me in my study and told me that it was walking about in the same place again, and I ran out under her direction and saw it walking about most daintily, showing off its beautiful crest in the most fascinating manner. I was able to get very near to it, and could see every feather and its beautiful long beak as it pecked upon the ground, and sometimes flew a short distance, very low, showing most conspicuously the black and white markings on the wings and tail. The charming combination of colour, grace of movement and shape, made me at once set it down as the most attractive and lovely British bird that I have ever seen. I would only mention having seen it to members of our Society, as I should be afraid to publish it to any who might be barbarous enough to molest it. If these birds were always protected, we might hope that in time we should succeed in inducing them to stay and breed on our shores. I saw it again later in the afternoon yesterday.

Modbury Vicarage, South Devon,
March 8, 1900.

G. C. GREEN.

Insects and Spiders.—If your correspondent, Mr. Percy Clark, has not seen "Ants and their Ways," by the Rev. W. Farren White, he has probably missed a little work which would be just what he requires in his study of ant life. It is published by the Religious Tract Society. As regards spiders, Mr. Stavely, in his "British Spiders," remarks: "The age to which spiders live has not yet been ascertained, but some have been known to live for four years." As a capital introduction to the study of the British species, I can thoroughly recommend this work. It is issued by Lovell Reeve and Co.

Fyfield, near Abingdon. W. H. WARNER.

Oysters.—Many years ago a man named Russell had some oyster beds in Langstone Harbour. As persons in search of cockles used to steal his oysters, he summoned one of them before the magistrates. In giving evidence, Russell swore he could identify some oysters brought into court, and being asked how he could do so, requested they should be opened. This was done, and inside several of them his name was found! Russell had slipped a number of small pieces of paper into the oysters as they lay gaping on the beds when the tide left them uncovered, and by this clever device secured a conviction.

Market Weston, Thetford. EDMUND THOS. DAUBENY.

SELBORNE SOCIETY NOTICES.

Increased Subscriptions and Donations.

The Council acknowledge, with thanks, the receipt of the following:—

Subscriptions.—W. H. Warner, Esq., Rev. A. L. Hussey, Miss H. C. Manson, £1 1s. Miss Brand, £1. H. Hastings Crewe, Esq., 12s. 6d. Miss C. V. Hall, P. Marsh, Esq., 10s. 6d. G. Wheeler, Esq., H. J. Evelegh, Esq., H. V. Shaw, Esq., R. Motter-Barry, Esq., Mrs. C. Cheatham, R. Evans, 10s. Miss Hawthorn, 8s. Miss E. Bayley, O. V. Aplin, Esq., Miss Gardiner, Miss J. C. Boucher James, 7s. 6d.;

Donations.—Miss H. C. Manson, £2 2s. Mrs. Giberne, Mrs. Hyde Clarke, £1. A. P. Evans, Esq., 15s. Mrs. Greg, 8s. Miss H. Forpken, M. J. Joyce, Esq., 5s. Miss H. B. Thompson, Dr. Cheadle, Mrs. C. Cheatham, Mrs. S. J. Rogers, 2s. 6d.

Annual Meeting.—The Annual Meeting and Conversazione will be held on Thursday, May 17; Lord Avebury, President of the Society, will take the chair. The Secretary will be glad to have the loan of pictures and exhibits for the occasion.

Council and Committee Meetings.—The next meetings of the Council will be on April 3 and 17, at 5.30, at 20, Hanover Square, W. Meetings of the Conversazione Committee will be held after the Council meetings on these dates.

Field Club.—At a meeting of the Field Club held on Tuesday, February 6, Mrs. Percy Myles, a vice-president of the Society, was elected Organising Secretary, and Mr. Wilkinson, Assistant Secretary of the Club.

Field Club Rambles:

April 21.—Meet at Chingford Station about 3.10 p.m. Thence, *viâ* Bury Wood, Sewardstone Green, and Leppits Hill to Highbeach, returning, *viâ* Fairmead, to tea at Royal Forest Hotel at 5.30. Trains: Liverpool Street, 2.15, 2.23; Hackney Downs, 2.28, 2.36, change at Wood Street; also Liverpool Street, 2.34 (fast); Hackney Downs, 2.41; Clapton, 2.45. Return fares from Liverpool Street: third, 1s., second, 1s. 2d.; from Hackney Downs and Clapton, third, 8d., second, 9d. Guide, Mr. C. Nicholson.

April 28.—Meet at Sundridge Park Station (S.E.R.) at 3.30. Then to St. Mary Cray *viâ* Sundridge Park, Camden Park, Chislehurst Common (tea), Perry Street and Scadbury Park. Train leaves Cannon Street (S.E.R.), 2.55; London

Bridge (S.E.R.), 2.57; Charing Cross (S.E.R.), 2.55. Take single tickets. Fare from Charing Cross, 11d.; Cannon Street and London Bridge, 9d. Passengers from Charing Cross may have to change at Grove Park. Guide, Mr. A. B. Wilkinson.

May 5.—Kew Gardens (in conjunction with the Battersea Field Club). Meet at the main entrance on Kew Green at 3 p.m. Visit the Tropical Aroid house, Succulent house, Aquatic tank and Alpine garden. Guide, Professor Boulger.

Selborne Society Badges.—The attention of Members is called to the recognised badge of the Society, which was designed by Mr. John Fullwood, and can be had of the Secretary, as follows. Prices: Brooch, 3s.; solitaire, 1s. 9d.; pin, 1s. 6d.; pendant, 1s. 6d. They are tastefully designed in pale blue and

silver, the outlines being as shown in the accompanying illustration. Councillor's badges have a crimson centre. They are especially useful as a means of identification between Selbornians at branch meetings, or at country Field Club Rambles.

NEWS FROM THE BRANCHES.

Barmouth.—At the Council meeting held on Tuesday, February 20, a hearty vote of thanks was accorded to Mr. D. Arthur Hughes, M.R.C.S., for his services as hon. secretary of the Barmouth Branch since its formation. Mr. Hughes is relinquishing the secretaryship, and will be succeeded by Miss Simms Bull, of Glanydon, Barmouth, to whom all communications should in future be addressed.

Croydon and Norwood.—On Tuesday, April 3, Mr. A. G. Bradley will lecture on "The Mosses of the Croydon District," at 23, Campbell Road, at 8 p.m. The Annual Meeting of the Branch will take place at 9, Chatworth Road, on Friday, April 20, at 8 p.m.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 125. MAY, 1900. Vol. XI.

SELBORNIANA.

Annual Meeting and Conversazione. — The announcement at the end of the present number will show that members attending the Annual Meeting and Conversazione will find no lack of interest, what with lectures by Mr. Enock and Mr. Lodge, to say nothing of the other speakers, and the exhibition of microscopes and other objects of interest. Tickets must be applied for in advance.

South Eastern Union of Scientific Societies: Congress at Brighton.—Members of the Selborne Society may be interested to know that the fifth annual Congress of this Union, to which the Selborne Society is affiliated, will be held at Brighton and Hove, on June 7, 8 and 9. All the meetings will be held in the Brighton Pavilion, except a reception by the Mayor of Hove on the evening of June 8. There will be a photographic exhibition on the afternoon of the 7th, a reception by the Mayor of Brighton on the evening of that day, at which Professor G. B. Howes, F.R.S., will deliver the presidential address. The morning and afternoon of the 8th and the morning of the 9th will be devoted to scientific papers and discussions, and there will be various excursions on the afternoon of the 9th. Members of the Selborne Society can become members of the Union on payment of 2s. 6d., and can obtain tickets and full particulars from the Hon. Secretary, Dr. G. Abbott, 33, Upper Grosvenor Road, Tunbridge Wells.

Fresh-killed Sea-birds.—With reference to the paragraph in our February issue with this heading we have received a letter from Mr. W. J. Clarke, of Scarborough, in which he says, "Will you allow me to say that I do not keep 'a supply of fresh

killed sea-birds always ready for customers,' nor do I indulge in 'wholesale slaughter of these birds.' . . . I procure birds to order only and *never* take more than I require. To this course, I think, no one but a faddist of the most extreme views can object."

Wounded Animals in Warfare.—We entirely concur in the following letter addressed by Mr. L. W. Pike, of Wareham, to the *Standard* of April 5.

"Sir,—There are some things they do better in America. The reply of our War Office to a request that men might be allowed to be sent out to attend to animals left wounded on battle-fields is an expression of sympathy with the object, but a refusal on the plea that the men would not be under military control, and that, doing such work, they would not be protected by the terms of the Geneva Convention. The reply of the American military authorities to a similar request is the general order by Nelson A. Miles, Major-General commanding the United States Army, 'with a view to avoid extreme suffering among wounded horses or mules on the field of battle, it is hereby ordered that a veterinary surgeon, or some other person detailed by the Commanding Officer, will accompany troops in an engagement, whose duty it will be to put an end to the agonies of horses or mules that, in his judgment, are suffering to a degree requiring such action on his part.'

"There is a refreshing absence of red-tapeism and clear evidence of manly readiness to undertake initiative and personal responsibility about this action of the Commander of the United States Army that is worthy of imitation."

The Seal Fishery.—Reuter's Agency of March 24 and 25 announces from St. John's, Newfoundland, that "splendid news of the seal fishery is to hand. The catch is the best there has been for many years. There is consequently great rejoicing." The accompanying figures show three hundred and twenty-seven thousand of these gentle and harmless creatures to have been clubbed and otherwise done to death in a fortnight, with the suggestive comment added, that 600,000 dollars has been earned "without any loss of life"!

Gilbert White's Diary.—We are glad to learn that White's diaries from 1768 to 1793 are to be issued by Messrs. Constable and Co., of 2, Whitehall Gardens, Westminster. They will form two large quarto volumes of about 700 pages each, and subscriptions are invited, at £2 12s. 6d., nett, if received before June 30. After publication the price will be raised to three guineas nett; but those who have already sent in their names to Mr. Otter are to have the work on the terms originally proposed.

ON CUCKOOS.

A YEAR or two ago, a writer in one of the London journals made a suggestion which does not seem to have been taken up. At any rate, there was very little discussion upon it afterwards in the same journal.

The suggestion was to the effect that the English cuckoo being migratory, and also parasitic (that is, utilising the nests of other birds in which to deposit its eggs, instead of adopting the usual course of building for itself), and the American cuckoo being non-migratory and non-parasitic (that is, it does build a nest for its own eggs), might there not be some distinct relation between migration and parasitism, which has not, so far, been traced out? The writer further suggested that the habits of Australasian cuckoos might throw some light upon the question, and asked whether any correspondents could assist with information bearing upon the subject, a request that was, I believe, not responded to.

Now, with regard to the American, also called Yellow-billed or Carolina cuckoo (*Coccyzus americanus*), I think it can hardly with fairness be called non-migratory, seeing that it spends the winter in the warmth of the Southern States and then ranges right away up to Canada for the summer months. The northward migration does not begin until spring is well advanced, and is usually completed by the end of May. Most of the birds leave the northern States in August, but some linger through September and even into October. The ranging over such vast extent of country in spring and autumn practically amounts to a migration, even although no seas be crossed.

Another inhabitant of the United States, and one that migrates from south to north and *vice-versâ*, in a manner similar to the bird just described, is the "Cowper" bird (*Molobrus benariensis*), and this, strange to say, *does* adopt the tactics of the European cuckoo, never building for itself but dropping an egg here or there into the nests of small birds. The Molobrus is not of the Cuckoo family at all, but belongs to the Sturnidæ or Starling family, and on the approach of winter masses in large flocks in the Southern States, thus resembling its cousin, the English starling.

The suggestion, however, with which we started this paper, seems really to have some bearing upon the habits of Australian cuckoos. Five birds of this family come down from the heat of the Australian continent to summer with us in cool Tasmania. Of these, the most plentiful and, at the same time, one of the prettiest, is the Fantailed Cuckoo (*Cuculus flabelliformis*), the familiar bird which sits upon old gum-stumps or orchard fence, and utters the rippling musical notes which fall so pleasantly upon the ear in the bright hours of spring. And not in those hours only, for I have noticed that these soft, delicate-looking

birds are very independent of weather, and will call away as cheerfully when the rains are descending and the north winds blowing as when the sun is dispensing his genial rays. The large Pallid Cuckoo (*Cuculus pallidus*) shares the same feeling of contempt (or shall we say affection) for Jupiter Pluvius; but the notes of this feathered friend are very different—shrill and penetrating to a remarkable degree. In appearance it takes much after the Hawks, and in this, as well as in its call, might with justice be considered own brother to the Indian Hawk Cuckoo (*Hierococcyx varius*) "whose loud crescendo notes are to be heard everywhere in the breeding season, resembling pipeeha! pipeeha! several times repeated, each time in a higher tone than the last, until they become exceedingly loud and shrill."

Besides these we have an occasional visitor in the imposing Channel-bill Cuckoo (*Scythrops novæ hollandiæ*) from New South Wales, and lastly, the two delightful little Bronze Cuckoos (*Cuculus plagosus et basalis*) charmingly small and prettily marked, but shy, keeping generally in thick clumps of bush, whence their sharp notes may be heard to issue.

Now all these species are parasitic in habit: needless to say, they are also migratory, coming to us from the further shore of Bass' Straits, in the springtime, leaving again in the autumn for the more genial winter of New South Wales or South Australia. But there is an Australian Cuckoo which is not parasitic: this is a Queensland species, the *Centropus phasianus* and, strange to say, it does not migrate, but is merely nomadic, roaming from one part of the colony to another. Here then, in Antipodean cuckoos, is the very relation between migration and parasitism upon which our author speculated. Who will trace the mysterious connecting-link which lies hidden from common ken? Is it, in the case of the Queensland bird, that the absence of roving instincts prevents its "mind" (for birds undoubtedly have mind) from becoming unsettled, and so the time which would otherwise be spent in crossing seas and roaming strange forests and plains in search of a mate, is more calmly and profitably employed in domestic duties and nursery cares?

H. Stuart Dove, F.Z.S.

Table Cape, Tasmania.

Concluding Note.—Miss Greenwood's observation on English cuckoos "singing at night" in Nature Notes for 1898 is very interesting, as showing how observers at opposite ends of the earth may trace similar habits in allied birds, in spite of the great differences of climate and environment. The "Fantailed" is the only species which I have heard indulge in this pastime, and very charmingly do its oft-repeated bars of soft trilling notes strike upon the ear, borne upon the scent-laden air from innumerable flowering wattles.

THE MAGPIE.

(*Pica caudata.*)

I AM pleased to say that the magpie is extremely common around Bristol, and this is largely due to the little attention paid to the preservation of game, since it is rarely that they are molested, except by the "loafing gunner." I shall confine my remarks to the bird in its wild state, leaving to others the tale of mag's impudence and thievish propensities in captivity. The magpie is an early nester, being resident with us all the year round, selecting the site for its nest about the beginning of April. The nest is a massive structure, composed of large sticks on the outside, and thickly plastered on the inside with smaller sticks and mud. A hole of sufficient size to admit the bird is made in the side, a little more than half-way up, guarded with thorns and sticks, and generally turned in the more secluded direction. It is in the shape of a dome, and exceedingly hard to get at with the bare hands, owing to its size and the numbers of thorns with which it is composed. The nest is placed in trees—elms by preference—sometimes at a considerable height, sometimes not more than thirty feet from the ground. Very frequently, too, the magpie selects a thick, high thorn hedge, and at the top of this builds a nest visible to any who comes near the spot. It may be as well to say that there is no difference of species between the magpie building in the tree and the magpie building in the hedge. My opinion is that the birds do not like the trouble of flying to a tall tree with materials for their nest, as, if you watch them, their flight is laboured and clumsy when ascending to any height, and if there happens to be a wind—as is frequently the case in April—they are blown out of their course and have great trouble in beating round against it. If this is not the reason, I cannot imagine why a bird, which has reared its young year after year in a high tree, should descend to a mere bush, where its eggs are in constant peril, and, in fact, are seldom allowed to remain unmolested. The magpie lays six or seven eggs, which are considerably larger than a blackbird's, and are a pale bluish white in colour, spotted all over, and abundantly so in general, with grey and greenish brown of several shades. I knew a pair of magpies near here who always built in the same tree year after year, and were invariably unsuccessful in rearing more than one or two young ones. The reason of this I do not know, unless the egg-producing powers of the hen-bird were in some way impaired, and this seems the more probable as the eggs were never uniform in shape and colour, but were frequently almost white, and in one instance one of the eggs was no bigger than a wryneck's—less than half its proper size. The young magpies accompany their parents for some weeks after they leave the nest, and it is not

at all uncommon to see seven or eight magpies flying in a line across a field, or from one tree to another.

Few truer words have been said than—

"The magpie is not a feeder nice."

Nothing comes amiss to him—from a small bird or snail to a horse's eye. He is very fond of the latter tit-bit, and I have seen him, in company with several crows, making the best of his opportunity on a horse's carcase before it was taken to the Zoo to feed the animals. They are also very partial to blood and bone manure yards, and there is a field near here where there is always a heap of this refuse, and on it the magpies and crows assemble like vultures. He does not refuse an egg, whether of a partridge or a thrush, nor does he hesitate to eat the young of birds and animals, especially when sickly or benumbed with the cold. In April I have watched a pair of magpies in the field in front of our house, and they would spend hours together pecking about in the grass, presumably for snails, slugs, and wire-worms.

Gilbert White tells us that the magpie is very destructive to young missel-thrushes, and perhaps many will say for certain he was right, but of this I am sure, that one missel-thrush is a match for any two magpies. This I can testify to with certainty, as I have seen a missel-thrush times without number driving the afore-mentioned pair of magpies from the field, and this it did simply to annoy them, as I am almost sure it had not got a nest of its own. I think that if magpies eat the young missel-thrushes, it is when the parents are not at home, and that they do not beat off the parent birds as is asserted. If White is correct, the magpies are often paid out, as not unfrequently hawks and crows take a fancy to their nests and appropriate them for themselves. This must be very annoying, but little more so than what I saw take place quite close to our house some years ago. A pair of magpies—the self-same two—were building their nest, and had nearly completed it when some rooks came, and first of all by stealth, afterwards openly, took it away stick by stick, in spite of the remonstrances of the rightful owners, who bravely did battle with them, while others were carrying off the sticks to an adjoining rookery. The rookery is deserted this year, and the magpies have come back to build in the self-same tree—accessible to none but winged robbers. I have read of a male magpie coming on the scene when his wife was keeping company with another male, and so fierce was his onslaught on the guilty couple that they eloped, unceremoniously pursued by the irate husband, who, on finding himself a bachelor, tried to get on without his partner, but finding the duties of nidification too arduous, left the nest and the district.

Magpies are exceedingly suspicious and wary, and a proof of this is given by the following, told by George de Roy.

Sentence of death had been passed on a magpie convicted of poaching, and a small hut was built, into which a man entered and waited for the bird to appear, but no magpie would come near. On the third day two men went into the hut and one came out, but still no magpie came. On the third day three men went in and two came out—it was of no avail. The next day four men went in and three came out, and so did the magpie, and fell a victim, plainly showing us the extent of a magpie's powers of counting.

The bird is far more handsome than is generally supposed, its dark plumage, especially the tail-feathers, shining with a metallic sheen in the sun, and when seen in the light. The full length of the magpie is eighteen inches. There are a number of hairs round the bird's beak, and these, when seen close, are very striking.

The magpie is not particularly shy round here. There are, for instance, two nests at the very outskirts of Bristol, quite close to houses and a barracks, where thousands of people are passing almost daily, yet the very fact of the remains of three nests in the one case, and of two in the other, being visible in contiguous trees, proves that they are little molested, and have made it their regular home for many years.

The magpie frequently heads the list of victims in the unscrupulous game-keeper's vermin rail, and many are killed by the following simple method, which I hope few will be induced to adopt. An open space in or near a wood is chosen, in the middle of which a cat is picketed under a solitary bush. Her cries attract all the jays and magpies in the district, who, glad to pay off old scores, fly in numbers to the bush, and so thick do they sometimes collect, that the hidden "gunner" has been enabled to bag as many as seven at one discharge.

Magpies are extremely local, and in many places a magpie's nest is quite a rarity. A plan, sometimes adopted, of introducing these birds into a district is to obtain the eggs from the nearest locality where they are found, and put them into a missel-thrush's nest. Such is the stupidity of other birds, that they will feed and bring up the offspring of other birds, perhaps destructive to themselves or their young, and I have heard of rooks' eggs being hatched by the missel-thrush—she must have thought the young ones had large appetites, especially if she had reared her own young ones the year before.

I would not recommend magpies for keeping in captivity, unless they are allowed to go unmolested in the house and garden, and even then they frequently fall a victim, perhaps to cats, perhaps to a wash-tub or a cistern.

Fylton Rectory, near Bristol. A. C. MACKIE.

NOTES ON LONDON BIRDS IN 1899.

THE following extracts from my diary form a continuation of the notes which I have contributed to this magazine for some years past. They are chiefly the results of observations made during my walks through Kensington Gardens and Hyde Park to my work each morning and during my return journey in the evening.

On January 3 I saw a greenfinch near the band-stand in Hyde Park. The black-headed gulls which now frequent London in such large numbers every winter are becoming more used to the presence of human beings: they feed regularly with the ducks and moorhens on the path opposite the island in the Serpentine every morning. The first blackbird's song which I heard was in Kensington Gardens on February 9. While sitting at home reading on the evening of March 3, I thought I heard the hoot of a barn-owl: the next morning my sister remarked that she thought she had heard an owl during the night, so probably my ears had not deceived me.

A woodpigeon was sitting on her nest on March 8: the nest was close to the railings on the south side of Piccadilly, near Walsingham House. On March 12, during a Sunday morning bicycle ride before breakfast, I inspected a crow's nest in a tree on the south side of Hyde Park, not far from the Albert Hall. I believe that this nest was subsequently deserted. A few days afterwards, when bicycling down the Hammersmith Road, I noticed another large nest: it was on a tree close to Addison Bridge, and was, I believe, built by a pair of rooks. On April 1 my sister told me she had seen a chiff-chaff in Kensington Gardens. About this time I crossed the Channel and spent Easter on the French coast near Dieppe, where the weather was horrible. On my return to England the weather was still stormy and unsettled. On Sunday, April 9, I saw two small warblers early in the morning in Kensington Gardens, which were probably chiff-chaffs; also a wren—the first I had seen in London for some time. On the 18th, a willow wren was singing near the Round Pond, and on this day I first saw young ducklings. On the 19th, I took a walk in Richmond Park and found various spring arrivals,—the redstart, yellow wagtail, cuckoo, tree pipit, and blackcap. On April 20 my sister saw a swallow in Kensington Gardens; on the 22nd a sand martin; and on the 23rd a wheatear and a redstart. On the 24th there were two sand martins flying over the Serpentine; and on the 25th a willow wren was singing near the middle of Hyde Park, although it was raining at the time. On April 26 I saw, to my surprise, a red-crested cardinal, which had no doubt escaped from captivity, feeding on a lawn in Kensington Gardens; and on the same day heard three or four willow wrens. On April 28, the reed warbler was singing in Hyde Park, and I saw sand martins,

house martins and swallows there; and in the evening I heard a wood wren singing in Kensington Gardens.

My brother and I put up a common sandpiper by the side of the Serpentine on May 2: it was the first bird of this species which I had seen in a London park for nine years. On May 3, I saw a swift over the Long Water. About this time a pair of whitethroats were frequently to be seen and heard in a shrubbery by the bridge, but they did not remain after May 8. On May 9, a cuckoo flew over my head at Hyde Park Corner; and on the 13th the spotted flycatcher made its appearance in Kensington Gardens. I have some evidence to show that this interesting little bird nested during the summer in Kensington Gardens, but unfortunately no proof of it. A linnet was in full song in Regent's Park on July 9. Mr. Ashley informed me that a cuckoo flew into Bridgewater House on July 16. Early in the morning of the 22nd a young moorhen was floundering about on the path opposite to the island in the Serpentine. The wretched bird had swallowed a baited line by which some small boys had hoped to catch fish. The wings and legs of the poor little creature were hopelessly entangled in the string, but on my approach it managed to roll itself into the water and was just out of the reach of the open umbrella in which I attempted to catch it. Being in a hurry I obtained the aid of a boatman and left him to effect the rescue. He told me next day that he had pulled the hook with a fish on it out of the bird's throat, and that after its release the bird appeared to be none the worse for its adventure.

On August 2 I watched several sparrows attacking male vapourer moths as they flew round a hawthorn tree near the Magazine in Hyde Park. So far as I could see, the birds simply pulled the moths to pieces out of sheer mischief and left their wingless bodies without attempting to eat them. Before August 2 I had always greatly envied the male vapourers, for whereas they can fly about wherever they like with their bright chestnut wings, their females are wingless and have to stay at home. So the males of this species must enjoy a freedom and independence which is denied to most of us.

On August 8 I saw a whinchat near the Round Pond. Shortly after this date I left town for a short holiday. On my return to London I was surprised to see hundreds of sand martins and swallows flying over the Serpentine from September 26 to October 8. House martins, too, were very numerous at this time throughout the whole of the West end of London, not only in parks and squares, but in many of the most crowded thoroughfares. During the first week of October house martins could be seen daily tearing up and down Victoria Street, and even in the Strand and Fleet Street. They used to nest in Fleet Street in Gilbert White's day, but they look very out of place there now.

51, *Gloucester Terrace*,
Hyde Park, W.
February 20, 1900.

A. Holte Macpherson.

HOW SCENERY IS MADE.

V.—Origin of Limestone Rocks.

IT is the general belief of geologists that all limestone rocks, of any large extent, take their origin from the dead shells, &c., of marine organisms of various kinds. Thus, chalk was originally—as it is even now being formed at the bottom of the Atlantic Ocean—composed of the microscopic shells of creatures called *Foraminifera*. These live in the upper parts of the sea; but when dead, the shells sink to the bottom, forming a soft white "ooze." When this sea-bottom is elevated and makes a land surface, flat or rounded and undulating hilly scenery is the final result after denudation by rain; as, having no depth of soil, it is devoid of trees. Such are the North and South Downs, Salisbury Plain, &c.

Limestones are of various kinds as far as their composition is concerned. Thus many are "coralline," *i.e.* they have resulted from enormous growths of corals, which, by continually dying and becoming decomposed, form masses of stony matter, in which remains of corals still exist. Such limestone occurs at Malton, near Scarborough, and in Devonshire, where the rock is hard enough to take a fine polish, constituting marble. This is much used for mantelpieces. In Derbyshire the limestone abounds with fossil "encrinites," a sort of stalked starfish, and is full of the broken joints of the stems. This, also, forms a good marble much used in Derbyshire. When rendered black by the presence of carbonaceous matter, it is used for small ornaments often inlaid with malachite. Plymouth is paved with marble.

Coralline limestone is still in course of formation round tropical islands of the Pacific Ocean, and off the coast of Australia, &c.

If a limestone happens to be in a volcanic country and subjected to great heat, it becomes crystallised and forms "statuary marble," which, when broken, resembles crystalline loaf-sugar. This kind is seen in the familiar tops of washhandstands, mantelpieces, &c. It comes from Italy and Greece.

The limestone of Egypt, of which the pyramids are built, is remarkable for looking as if it was filled with pieces of money made of stone. These are enormous kinds of foraminifera, whilst those of the chalk are microscopical, and therefore not distinguishable with the naked eye. It is called nummulitic limestone, from the latin word *nummus*, meaning "money."

As the presence of nummulitic limestone has been detected high up in the Alps and Himalaya Mountains, and nummulites occur in the clays of Bognor in England, this proves that the great range of mountains running east and west from the Pyrenees to the Island of Formosa have been upheaved in a comparatively (*i.e.* geologically speaking) late period of the

world's history, for all nummulitic limestones belong to quite a late geological epoch. On the other hand, the Malvern Hills are some of the oldest in the world.

All the limestones mentioned thus far were of marine origin, but in the Isles of Portland and Purbeck, what is known as Purbeck marble, often used for small pillars in churches of the south of England, is of fresh-water origin, as may be readily perceived by the character of the numerous shells which abound in it.

Limestones, if soft, are easily worn down by running water; so that deep ravines and river valleys often characterise a limestone table-land, such as the Stroud Valley in Gloucestershire, through which the Great Western Railway passes, and the country about Matlock and Buxton in Derbyshire.

The kopjes of South Africa are the results of denudation, the rivers and spruits having cut away the intervening spaces.

Besides being mechanically worn down by it, water will take up a great deal of lime in solution; and, as the rock is always full of cracks, surface-water penetrates down and dissolves the limestone, continually widening the cracks and loosening blocks. As this goes on for countless ages, the water in time forms a tunnel for itself, and consequently whole rivers may flow for miles underground, issuing out at some lower level. Thus the Peak of Derbyshire is an elevated flat-topped plateau undermined in this way by the river, which finally issues at the Peak Cavern.

Enormous caves formed in this way occur in some limestone countries, as in Kentucky. Derbyshire is celebrated for them; and as the water, trickling down with the lime dissolved in it, evaporates, it deposits the carbonate of lime in the form of "stalactites," suspended from the roof, just as water forms icicles by freezing, while the "stalagmite" accumulates on the floor.

One feature of a limestone country consists in long winding and narrow valleys, with precipitous limestone walls on either side, such occur at Cheddar; and it is believed by some geologists that these were originally formed by subterranean rivers, the roof having gradually fallen in, so that they now are open to the sky. Others attribute them to ordinary erosion by a river, now diverted.

With regard to the uses of limestone, the most common is as building stone, as at Bath and in Derbyshire. When hard enough to be polished as marble, it is of course used for all kinds of decorative work.

Burnt limestone and chalk supply quicklime, by driving off the carbonic acid, which in combination with lime forms limestone, this being really carbonate of lime.

If the lime be in combination with sulphuric acid, it is called gypsum or sulphate of lime. This sometimes forms considerable masses of rock imbedded in others, but does not affect the scenery.

One kind is called alabaster, and is useful for ornamental work and statuary, but it is too soft for important and durable statues. When calcined, the water, of which nearly one-third enters into the composition of gypsum, is driven off. It then becomes "plaster of Paris" (much gypsum occurring near that city), which when mixed with water, reforms stone. Hence its great value as a cement and for making casts for modelling, &c.

Hydraulic limestone is a peculiar kind containing silica and lime disseminated through it. As these ingredients enter into chemical union with the lime and water they make a firmer cement than mortar, and "set" under water.

GEORGE HENSLOW.

LIMESTONE.

HAVING read with much interest the paper on "How Scenery is Made" in the February number of NATURE NOTES, I feel inclined to give some illustrations of what is there said concerning the peculiarities of limestone that have come under my notice. For I take it that one of the special features of these pages is, and rightly so, that they contain chiefly the record of what the writers have seen or what has come within their personal knowledge, thus furnishing readers with new facts and fresh interpretations.

On looking into Chambers's "Encyclopædia" I see that the chief varieties of limestone are *chalk*, *oolite*, *compact limestone*, a hard, smooth, fine-grained rock, generally of bluish-grey colour; *crystalline limestone*, *saccharine* or *statuary marble*. But it is only of compact limestone that I shall here speak.

Of this stone were the hills composed that overlooked, from a distance of half a mile, the home of my early days. And then from my father's house straight away to the Bristol Channel, about five miles off as the crow flies, the ground was almost flat —a Somersetshire moor (locally styled "The Mash"), the fields divided by water dykes, and having a principal stream called "The Grut River" ("grut"=great, what its real name was I never heard, or do not remember), splendid grazing land, clayey loam.

The hills near us were covered with trees, except the principal feature, the Toot, which rose above Cleeve Woods, with its picturesque limestone crags exposed to the cold north-east winds that came across the moor. Three valleys or coombes divided the uplands in our front, called Brockley, Cleeve and Goblin Coombes, the first taking its name from an adjoining village and the last obviously from some ghost or other terrible story due to overhanging rocks or other terrorising appearances.

These coombes, which had their mouths towards the sea

northwards, looked at first sight the very places for delightful trout-streams, yet no vestige of a brook or rill even is to be seen in them. The rain that descends passes through the crevices of the limestone, to burst up in springs in the lowlands, some of which are of large size and come up in the Grut River, forming a sort of lake, the principal one being Midgell Pits in the parish of Chelvey, which I have rowed through many times in a punt. It is, or was, some twenty or thirty yards across, and is popularly said to have no bottom ; the water is very cold even in summer, and the ground around is marshy and covered with trees, flags, &c.

I speak of what this spring was, for I have not seen it for many years, but notice passing on the railway that the stream of water coming from it (for it is on a branch of the river) is much reduced by pumping from wells for the Bristol water-works. This pumping has done much good to the moor by reducing flooding, which was very extensive forty years ago. We used then in some winters to have miles of skating.

There are other large springs further down the river, and one at Claverham sending a stream through that village, and other smaller ones nearer the hills. Clear water can always be found near the surface in the lowlands.

I have said that the coombes contain no streams, and we never found any pebbles or rounded stones to indicate the presence of running water. Still, twice in my life-time has water burst forth from the hill-sides after prolonged rain, which has overcharged the subterranean channels. I remember when I was quite a youngster my father driving me to the head of Brockley Coombe to see where the water had come out and run down the coombe. I fancy he went as a member of the Highway Board to see if any damage had been done, but none had.

Again, four or five years ago, one of my brothers took me half a mile up Goblin Coombe to show me the head of a stream that he had a short time before seen running for a couple of days, when it stopped ; here almost no trace of its existence had been left. The stream had issued where the edge of a large flat rock, rising a hundred feet or more above the bottom of the coombe, entered the ground at our feet at an angle of about thirty-five degrees with the horizontal. I thought then that the rain percolating on to this table, which probably extended for a considerable distance into the side of the valley, might have caused the overflow, and this coupled with a full subterranean stream may have been the case.

As to caves in limestone rock, I have been in many of these in Derbyshire and elsewhere. They can be visited by anybody ; but the following account of a newly-discovered cavern in private grounds in Devonshire may possess some novelty.

Some eighteen years ago, one afternoon my brother-in-law, Mr. Thomas Bulteel, of Radford, near Plymouth, was shooting in his woods with his keeper. After a time the man, who had

stayed behind to pick up a rabbit, not coming along, his master looked back for him, and to his astonishment saw only his head, shoulders and arms. "What b'em yew a doing of, Jack?" he at once cried out, in the only language that would be understood; to which came the answer, "Well, zur, I be blawed if I de knaw."

Jack was soon extricated from his odd position. The ground had given way beneath his feet, and the "swallow-hole" had nearly engulphed him. An inspection showed that it was no small one.

A few days after this the late Mr. Spence-Bate, F.R.S., was invited to explore the cavern, and I formed one of a small party of six or seven to accompany him. Putting on khaki over-clothing and each armed with a candle, we slid down a slope of loose earth and stones, some fifteen feet or more, to a sound stalagmite floor where we could stand up, and where we lit our candles. We were in rather a narrow place; two roads lay before us, one ended in a *cul-de-sac* at a distance of some twenty yards, the other we followed. After going a little way we were sent one by one along a low passage to the left, in which we could just crawl on hands and knees, to see a small crystal pond at its end, about three feet across, with stalactites being formed above it by the water dropping from the roof, whilst stalagmite was being deposited at the bottom of the pond, which was only a few inches deep.

Passing along the principal gallery or road, we had in places to crawl through tunnels just large enough to let our bodies through by lying down flat and propelling ourselves with our toes and elbows: presently we would come to a chamber as large as an ordinary room. To get out of one of these chambers we had to mount a perpendicular wall of rock, and managed this with a rope after the leader had first been pushed up with one. Here it was that a stout member of our party turned back. He no doubt had been thinking of Dante's words in the "Inferno," "All hope abandon ye who enter here."

After what seemed to be about twenty minutes, but probably was not more than half the time, of proceeding in various fashions, we emerged into a large, long chamber which much reminded me of the interior of a vaulted cathedral, the great difference being that the floor here sloped considerably and was a mass of stones of all sizes. Towards the lower end on the left there was a sort of transept, with an arch leading to it, and above the arch a large stalagmite stood as if it were a life-sized figure of the Blessed Virgin. This resemblance was very remarkable.

We were far inside the hill, which must be well hollowed out, for I noticed roots of trees in several places coming through the roof of the cave. There will be a great fall in some day. When at Pyrmont in Germany I was taken to see a place where a cave had fallen in, with the result that some large ponds were formed.

The limestone hills in and around Plymouth have been very extensively quarried, and several caverns have been laid bare containing bones of animals now extinct in Britain. The Radford cave, however, was a virgin one: no evidences of its ever having been inhabited by man or beast have been found. This limestone is good for building purposes, and when polished forms a beautiful marble. The handsome columns in the Brompton Oratory are from the Radford quarry. They have a rich red tint. Visitors to Plymouth notice in wet weather that in the streets they are walking on marble.

The stone is too soft for road making, and where it is used for this purpose the roads are very dusty in dry weather and very muddy when it is wet.

Tuckton, Christchurch, Hants,
February 7, 1900.

GILES A. DAUBENY.

REVIEWS AND EXCHANGES.

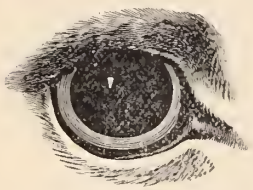
Chatty Object Lessons in Nature Knowledge for Standards I., II. & III. By F. W. Hackwood. Longmans, Green and Co. Price 3s. 6d., or in 3 parts 1s. 6d. each.

WE feel that in our limited space we cannot do justice to this excellent school-book. The three parts—presumably one for each "standard"—each contain outlines of thirty lessons. These are mainly devoted to domestic and other familiar animals, only the last eleven lessons being given to plants, and each outline lesson occupies about five pages. As the Preface states, "The teaching of kindness to animals is now universally recognised as a part of every child's education; throughout the whole of these Lessons the humane treatment of animals is unobtrusively but consistently inculcated." The lessons are essentially practical and logical, observation and inference, the relation of structure to function, being inculcated at every step. Besides numerous excellent illustrations of the most distinctive parts of the animals, a novel feature is a large series of simple white outlines on a black ground, as models for blackboard diagrams of the whole animals. These might well be also utilised as drawing copies for

OUTLINE OF A CAT.

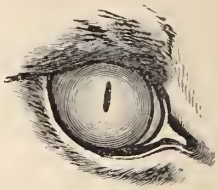
pupils. As an example we can only quote here the summary of a lesson on the Cat. "(1) The **feet** have soft fleshy **pads**: the **toes** are used **for walking upon**, the **heel** part being **raised**. (2) There are five **hooked claws** on each fore foot, and four on each hind foot: they work in and out of **sheaths**. (3) The **body** is **slim**, the **head round**, and the **tail long**. (4) The **eye** is round, but the **pupil varies** according to the amount of **light**. (5) The

teeth are **long and sharp.** (6) The **tongue** is **dry and rough.** (7) The **fur** is **soft, thick** and **smooth.**" Each of these points is expanded. Thus it is duly explained that a cat cannot move its jaws sideways for chewing, and



A Cat's Eye at Night.

A Cat's Tongue.



A Cat's Eye by Day.

A Cat's Foot: Claws Extended.

A Cat's Mouth.

A Cat's Foot.

has no grinding teeth, and that the roughness of the tongue serves to scrape flesh off bones. Almost every point also is illustrated, as will be seen by the figures referred to in this summary, which we are enabled, by the publishers' courtesy, to reproduce.

The Naturalist's Directory, 1900. L. Upcott Gill. Price 1s. 6d. nett.

The sixth annual issue of this most useful directory has been slightly curtailed by the abandonment of the attempt to enumerate the books of the year, and it appears, we are not surprised to see, at a slightly enhanced price. Though, of course, containing errors and omissions, the former appear to us singularly few, and the book remains an indispensable table-book to the student of natural history who wishes to keep in touch with his fellows.

Society for the Protection of Birds. Ninth Annual Report.

This highly satisfactory Report for 1899, showing that 22,000 members have been registered, and 2,325 have subscribed during the year, so that the Society has "a satisfactory balance" in hand, makes us inclined to envy our sister organisation, as does also the statement that the local branches now number 144. We are, however, in such complete sympathy with the objects of the Society that we can as heartily rejoice in its success as in our own.

Epsom College Natural History Society. Report for Year ending Christmas, 1899. No. 11. L. W. Andrews and Son, Epsom. Price 1s. 6d.

This Report, from a school society which has just become affiliated as a Junior Branch to the Selborne Society, is an excellent example of what such a report should be. The society has astronomical, botanical, entomological, geological, photographic and zoological sections, and their report contains a full list of the higher plants observed, with dates of first blooms seen in the year, a similar list of Lepidoptera, in which we note, as in other districts, the record of the abundance of the Humming-bird Hawk-moth, a list of birds with dates, an anthropometric report on the boys in the school, and a full series of meteorological observations.

The Humane Review, No. 1, April, 1900. London: Ernest Bell, 6, York Street, Covent Garden. Price 1s. net (quarterly).

We welcome the advent of this very promising quarterly, in which every phase of humanitarianism is promised a home. The article which most appeals to our special sympathies in this opening number is that by Mr. Hudson on "The Dartford Warbler." Paper, type and wrapper leave nothing to be desired.

Municipal Affairs, No. 12, December, 1899. New York. Price 25 cents.

It is a very hopeful sign when America, which we generally think of as entirely given over to utilitarianism, starts and supports a quarterly magazine mainly devoted to the endeavour to foster the ideal of the beautiful in connection with the development of towns. We commend "Municipal Affairs" to all town and county councillors.

Received:—*The Victorian Naturalist* for February, *The Irish Naturalist*, *Knowledge*, *Science Gossip*, *Animal World*. *Animal's Friend*, *Our Animal Friends*, *Humanity* and *Agricultural Economist* for April.

NATURAL HISTORY NOTES AND QUERIES.

Long-tailed Field Mice.—A few days ago I turned one of these mice loose before my cat, which clears the house of the common mouse, but she would not touch it. People here have a like experience. My garden is overrun by cats, and long-tailed mice abound to such an extent as to do much damage. The cottagers checkmate them by chopping up some gorse and putting it in a row in the ground. In this they plant their peas. The prickles baffle the mice; but the best way to keep them in order is to encourage kestrels and owls.

Market Weston, Thetford. EDMUND THOS. DAUBENY.

Instinct of Wild Rabbits.—It is not every reader of NATURE NOTES, probably, who understands that ordinary wild rabbits cover up their nests most carefully at the entrance of their holes with the earth they usually scratch out, to the extent of about a yard, before kindling. They use these shallow holes often several times in the season. Last summer, one had three litters of young, one after the other, in my orchard. At the present time, from where I write these lines, a nest is situate about thirty yards away, where I frequently see the mother mornings and evenings, and a few mornings since I saw her carefully filling up the entrance by placing herself so as to press down the soil with her body while industriously scratching the earth to block up the entrance for the protection of her young.

Astwood Bank. JAMES HIAM.

Instinct in Birds.—It is pleasant to feel that any remarks of mine should have been the cause of bringing Mr. Degen's interesting observations before our notice.

It is always difficult to decide which acts in beasts and birds are due to instinct or individual experience, and consequent acts of intelligence. The case I gave of the canary showing alarm at the sight of a hawk seems to be one of instinct.

The blue-birds having had, I presume, some experience of wild life eleven years ago, may have seen the ravages caused by birds of prey amongst their feathered brethren. In "Comparative Psychology," by C. Lloyd Morgan, I lately came across the following passages: "In a very interesting chapter on 'Fear in Birds,' Mr. W. H. Hudson, in his work on 'The Naturalist in La Plata,' describes many observations which point to the conclusion that the fear of man and other enemies is very largely due to parental instruction or individual experience." Again: "Fixing our attention on the relation of instinct to intelligence, we may say that animals and men alike come into the world with an innate capacity for active response to certain stimuli. This is part of their organic inheritance. The response may be from the first an accurate and adequate response; in such cases we term it instinct. More frequently the responses have a variable amount of inaccuracy and inadequacy; in such cases the animal, as a matter of observed fact, has a power of selective control over the responses; this power of selective control over the activities which are essential to daily life is the first stage of intelligence. And whereas for the instinctive action, as such, consciousness is only an epiphenomenon, or adjunct accompanying the performance of the action, for its intelligent guidance consciousness is essential."

Glenthorne, Eastbourne. ETHEL G. WOODD.

Mr. Degen may, perhaps, find something in the following to help him to an explanation of the fright exhibited by his cockatoo on seeing the skin of a snake.

A few years ago, I took, with two other gentlemen, a shooting on the outskirts of Dartmoor. It was a very fine autumn, and a great many adders used to lie out in a rocky part where we shot rabbits. One of my partners, though by no means a timid or nervous person generally, every time he saw a snake would become much agitated, use very unparliamentary language, and shoot or kill somehow, if he could, the reptile that gave him so much annoyance.

Seeing that his conduct was so strange and contrary to his usual quiet demeanour, moreover leading to a waste of cartridges that might be wanted if any of the party ran short, I asked my friend what was the meaning of it. He told me that when a small child he had been frightened by a snake, and he could not get over it however much he tried, and that the sight of one drove him mad, as it certainly seemed to do.

In the same way the young cockatoo may have had a fright which left its lasting impression on the brain, or it may be that one of its parents had been so frightened when young, and transmitted the result to its offspring.

April 5, 1900. GILES A. DAUBENY.

Crow.—Although the war has to a great extent absorbed the attention of even the naturalist, it may be worth while to record the sufferings of a member of the faithful but much persecuted crow-family. While out for a walk with my brother, at Pill, near Bristol, I perceived, on passing through a copse, a crow rise from the ground some forty yards in front. On going to the spot I was surprised to see another one sitting on the ground. It made no effort to escape, and allowed me to pick it up, only feebly pecking my fingers. On examining it, I found that its leg was covered with blood, and was broken close above the toes. The dry, clotted blood plainly showed that the wound had been inflicted at least the day before, and no doubt the mate had during that time assiduously watched by the side of its dying partner, only leaving to fetch it food. How long this might have lasted it is impossible to say, probably until the keeper, gun in hand, passed near the spot. I took it home with me, hoping to put its leg in splints and feed it, but I ultimately found that its wing was also fractured near the base. Considering the case hopeless, I put an end to its miseries by chloroform. On skinning it, prior to stuffing, I found that a bone was broken in both legs, and that there was also a shot lodged in the abdomen.

Thus there stands and will stand a lasting monument to the sufferings and heroic affection of these noble birds, and at the same time a testimony to the brutality and bad shooting-powers of the keeper.

Fylton Rectory, Bristol. A. C. MACKIE.

Nightingale's Nest.—I shall be glad if any one of your correspondents will tell me the origin of the fable (if it is a fable) that nightingales have an upright thorn in their nests. It is firmly believed by the villagers in this part of Hertfordshire.

Hinxworth Rectory, Baldock, C. A. CLUTTERBUCK.
April 5, 1900.

Mimicry in Starling.—I send you the following natural history note, on which I should be glad to have your opinion.

Last November, when staying in the country, I was much struck by the power of mimicry shown by a starling. The bird was standing on a low roof some twenty-five feet distant from me when it imitated exactly the song of the blackbird. Though the rich tones of the blackbird were wanting, yet the mimicry was most wonderful and easily recognisable. The bird gave the song two or three times, and then departed. What made it more surprising was that no blackbirds were in song. Is this usual or no? I should be very much obliged if you could give me an answer to this question through the pages of NATURE NOTES.

160, *Norwood Road, West Norwood, S.E.* M. H. MOON.
March 18, 1900.

[The imitative power of the starling in captivity is well known, and this bird may well have heard, admired, and learnt the blackbird's note earlier in the year; but we shall be glad of further information as to such musical memory in wild birds.—ED. *N. N.*]

Calls of Birds.—I should feel greatly obliged to any of your correspondents who would contribute calls and notes of our British birds. It is very desirable that the scream of the blackbird should be syllabled by different observers. Again, the love song of the greater tit would repay independent renderings. I am aware that many bird-lovers are thoroughly *au fait* in both calls and songs, yet how few attempt to record their knowledge of this rather difficult subject.

Springfield, Brigg, CHAS. LOUIS HETT.
April 4, 1900.

SELBORNE SOCIETY NOTICES.

The Council acknowledges with thanks the receipt of the following donations and subscriptions:—

Donations.—Mrs. R. F. Sturge, 5s. Miss E. Lecky, 2s. 6d. Miss E. B. Rawson, 18s. Earl of Stamford, £2. Earl of Selborne, £1. Earl Percy, £3.

Subscriptions.—J. H. Masters, Esq., 10s. Mrs. M. Wolrige Whitmore, 10s. Mrs. J. Hogg, 10s. Miss Agatha Walker, 10s. Anon., 21s.

Council and Committee Meetings.—The next meetings of the Council will be held at 20, Hanover Square, on Tuesdays, May 1 and 15, and June 5, at 5.30 p.m., and of the Conversazione Committee on May 1 and 15, at 6 p.m.

Annual Meeting.—The Annual Meeting and Conversazione will take place, as previously announced, on Thursday, May 17, from 8 to 11, at the Society's rooms, 20, Hanover Square, W. The Right Hon. Lord Avebury will give the Presidential Address, and will be supported by the Earl of Stamford, Sir Robert Hunter, Professor Boulger, the Right Hon. James Bryce, M.P., Rev. Professor Henslow, Professor Hulme, and others. After the meeting Mr. Fred Enock has kindly consented to give one of his demonstrations, illustrated by lantern slides, of his own recent drawings and photographs. Mr. Q. B. Lodge will also exhibit some of his slides of birds. There will also be exhibits shown by Mrs. Brightwen, Mr. F. W. Ashley, Rev. Professor Henslow, Miss Woodd, and members of the Quekett and Royal Microscopical Societies, &c.

Branch Secretaries are requested to send in their applications for tickets of admission for members of the Society and their friends to the Secretary, 20, Hanover Square, W., if possible not later than May 10. Members requiring tickets should apply to the local Hon. Secretary, or, in the case of members unattached to branches, to the Secretary of the Selborne Society, 20, Hanover Square. A stamped addressed envelope should in each case accompany the application. It is particularly requested that those intending to be present will fill in their names on the ticket in the blank space provided for the purpose, and also that honorary secretaries of branches who attend will take steps to make themselves known to the Secretary or members of the Council.

NEWS FROM THE BRANCHES.

Croydon and Norwood.—The Annual Meeting of the Branch was held on April 20, at 9, Chatsworth Road, Croydon. The annual report referred to the work that members of the Society have done towards securing Croham Hurst and Grange Wood, and expressed a hope that even now the former may at least be saved. The formation of a Croydon Antiquities Protection Committee had done something towards calling attention to what is left of Croydon Antiquities. A number of lectures had been delivered during the winter, special attention being given to the providing of natural history addresses to the juveniles. The finances show that by careful management the Branch just pays its way. Increased subscriptions are required and more members would be welcomed. The report was adopted on the proposal of Mr. J. C. Peters, seconded by Miss White. The election of officers was proposed by Miss Cropley, seconded by Mrs. Grover. Mr. J. C. Peters succeeds Mr. F. Downing in the delegacy to the Central Council, Mr. Downing having been elected

thereto permanently. Votes of thanks were proposed to the Hon. Secretary, and to Mr. and Mrs. Grover for their hospitality. The list of officers of the Branch is as follows for the ensuing year:—*Vice-Presidents*, Mrs. E. Phillips; Rev. F. E. J. Bird; W. H. Bishop, Esq., J.P.; H. Keatley Moore, Esq., B.A., B.Mus.; F. J. Horniman, Esq., M.P.; W. Whitaker, Esq., B.A., F.R.S., F.G.S.; *Committee*, E. S. Adeney, Esq.; Miss B. Buckland; T. Duff Smith, Esq.; H. B. Hoare, Esq.; Dr. J. C. Hobson; Mrs. L. H. Martin; Miss L. McNaught; Miss Musselwhite; H. W. Perry, Esq.; F. Downing, Esq.; J. T. Rawlings, Esq.; *Delegate to Central Council*, J. C. Peters, Esq.; *Hon. Solicitor*, H. S. M. Grover, Esq., 15, Coleman Street, E.C.; *Hon. Secretary and Treasurer*, Edward A. Martin, F.G.S., 23, Campbell Road, Croydon (West).

A lecture was given on Tuesday, April 24, by Mr. E. A. Martin, F.G.S., to the members of the Dennett Hall Natural History Society, the subject chosen being "Some Seaside Creatures." The lecture, which was illustrated by numerous specimens and by the lantern, dealt with the many creatures which are found between tide-marks, such as sea-weeds, corallines (*Sertularia*), limpets (*Patella*), winkles (*Littorina*), cuttle-fish (*Sepia*), sea-mats (*Flustra*), acorn barnacles (*Balanus*), &c. The next meeting of the Branch is on May 19, when a ramble around Sanderstead will be conducted by Mr. T. Duff-Smith. Members and friends will be welcomed.

FIELD CLUB RAMBLES.

May 5.—Kew Gardens (in conjunction with the Battersea Field Club and the Hampstead Astronomical and Scientific Society). Meet at the main entrance on Kew Green at 3 p.m. Visit the tropical aroid house, succulent house, aquatic tank, and Alpine garden. Guide, Professor Boulger.

May 12.—Titsey Hill. Leave London Bridge 2.55, Victoria 2.30, East Croydon 3.19, for Woldingham, where meet at 3.40. Return tickets, 2s. 8d. Tea at 6 at Botley Cottages. Return from Oxted 8.19, paying excess to Woldingham. Guide, Miss Wade.

May 19.—Purley Down to Croham Hurst. Book return to South Croydon, but alight at Sanderstead and pay excess. Victoria 2.30, Thornton Heath 2.51, East Croydon 2.59, London Bridge 2.25; change at East Croydon, and join train from Victoria. Tea at Old Fox Farm at 6 p.m., Guide, T. Duff-Smith; or, as an alternative, Epping Forest (in conjunction with the North London Natural History Society). Meet at Liverpool Street Station (outside barrier of platform 5) in time for the 2.41 to Loughton. Fare 1s., 3rd class return. From Loughton, *viâ* Monk Woods and Honey Lane to "King's Oak," High Beach, for tea about 6. Return from Chingford. Guide, J. A. Simes (President of the N.L.N.H.S.)

May 26.—Byfleet and Weybridge (members only). Leave Waterloo, main line, 2.29 p.m., arrive at Byfleet 3.15. Take return tickets, 2s. 10d. to Weybridge, and pay excess 2½d. at Byfleet. Walk by banks of Basingstoke Canal and River Wey, to ponds in Mr. Locke King's grounds, and thence through a pine wood to Caenswood Cottage, 3¼ miles. Tea, by invitation of Dr. Lionel Beale, F.R.S., at Caenswood Cottage. Guides, Dr. Willson and Professor Boulger.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 126. JUNE, 1900. Vol. XI.

ANNUAL MEETING AND CONVERSAZIONE.

THE Society's Annual Meeting and Conversazione took place on Thursday evening, May 17, at 20, Hanover Square, W. The attendance, though perhaps a little below the average of previous years, was a full and representative one.

In the unavoidable absence of the President, Lord Avebury, D.C.L., F.R.S., through the death of a near relative, the chair was taken by the Right Hon. James Bryce, M.P.

Mr. Bryce being, however, unable to arrive by eight o'clock, the Rev. Professor Henslow, F.L.S., F.G.S., first took the chair, and read the following Annual Report of the Council:

The Council of the Selborne Society has pleasure in presenting to the members its Report on the fourteenth year of the Society's work.

The death of Sir William Flower, K.C.B., F.R.S., has deprived the Society of one of its most valued vice-presidents and supporters.

The Society's magazine, NATURE NOTES, under the editorship of Professor Boulger, continues to arouse increasing interest and approval. To its publication the Council can confidently point as a sufficient justification for the existence of the Selborne Society, and the Council looks forward to the day—which it is hoped may not be very distant—when the state of the finances may permit of its enlargement. The editor would have no difficulty in filling month by month many more pages with contributions from the members and, did funds permit, would be glad to see those pages more adequately illustrated than they are perforce at the present time.

It is in contemplation to invite some of the kindred societies to send their representatives to the meetings of council in the hope that they may thus make more efficient use of the Magazine. It is felt that the Society's organ forms a unique channel for the publication of news of interest to the members of the Selborne Society and to those who hold similar opinions. It can fairly be claimed that much of the tendency of the modern press and of the local bodies towards the holding of better views on the subjects most dear to the hearts of all true Selbornians is due to the education of the public by this Society, and principally by its Magazine.

The winter series of lectures arranged by the Council was so badly attended by the members that it was reluctantly decided to discontinue them. The first took place on Tuesday, November 21, at Morley Hall. The subject chosen by the Rev. Professor Henslow was "Plants and their Surroundings." The chair was taken by Sir Robert Hunter. The second lecture was given at the Royal Zoological Society's rooms on Friday, December 15. The subject was "Wonders and Romance of Insect Life," by Mr. Fred. Enock, illustrated by his own lantern slides. The third and final lecture was given by the editor of the Society's Magazine, Professor G. S. Boulger, at the room of the Linnean Society, on Tuesday, January 16, on "Man's First Contact with Nature." Had it not been for the kindness of the honorary treasurer in undertaking to guarantee the Society against any loss on the opening lecture, and of the Linnean Society in permitting the Society to make use of their room at Burlington House free of cost, the deficit on the lecture account must have been more considerable than it has proved to be.

The Council is glad to report, however, that a much greater measure of success rewarded its other winter venture, viz., the arrangements for Saturday afternoon visits to places of natural history or archæological interest.

This scheme, having been proposed by Mrs. Percy Myles at their meetings in October, was sanctioned by the Council, Mrs. Myles and Mrs. Durrant forming a sub-committee to carry it out. The first meeting was on November 11, at the Natural History Museum, when Professor Boulger gave an exposition of the botanical cases in the Museum. The second was at Westminster Abbey, on December 9, under the guidance of Mr. Stanley Austen, when the chapels, refectory and cloisters were inspected, Westminster Hall and its crypt being afterwards visited. The third meeting was at the Natural History Museum, on January 13, when Dr. Bowdler Sharpe, F.R.S., kindly showed the members over the working part of the Bird Department, giving a most delightful account of the various bird treasures there preserved. The fourth meeting was to have been at Lambeth Palace, but the intended guide having unfortunately fallen ill, Mr. L. Fletcher, F.R.S., keeper of the Mineralogical Department of the Natural History Museum, kindly undertook, at short notice, to give an address on meteorites in his department, on February 10, which proved most interesting and far more intelligible than many may, from the subject, have expected. The fifth and last meeting was at Kew Gardens, on March 10, under the guidance of Professor Boulger. The intention had been to devote the time entirely to the museums; but, the day proving spring-like, after an hour in Museum I., the party adjourned to the gardens, the Palm House and the Temperate House. Tea was taken in the grounds, and the meeting only broke up at closing time. Each meeting began at 2 p.m., and most of them ended at 4 o'clock. The attendance varied from 15 to 30, averaging about 24. The thanks of the Society are due to Mr. Stanley Austen, Professor Boulger, Mr. L. Fletcher and Dr. Bowdler Sharpe for the time and attention given by them, which secured the success of each of the meetings.

The Field Club Report for 1899 presented to the Council has already been printed in the Magazine. The Council regrets that Mr. A. Nash, the honorary secretary, resigned his office at the close of the season. Mrs. Percy Myles has accepted the post of organising secretary to the Field Club, and Mr. A. B. Wilkinson that of assistant-secretary. The list of rambles for the present season has already been arranged, and the session promises to meet with even greater success than that of last year. The meetings of the Club afford the London members and the members of the suburban branches opportunities of meeting and social intercourse, and are the principal source of new accessions to the strength of the Society.

One of the aims of the Council during the year has been the carrying out of that general object of the Selborne Society, the promotion of the study of natural history amongst the younger members of the community. The Council has therefore offered to supply the natural history societies or library committees of the principal public schools throughout the country with a free copy of the Magazine for six months, and has at the same time called attention to the existing rules for the formation of Junior Branches at schools by means of a circular, of which the following is the substance :—

"JUNIOR BRANCHES.

"The Council is anxious to promote the study of natural history on the lines of the Society among juveniles, and, with this object, to encourage the formation of Junior Branches. The Council appeals, therefore, to the principals of colleges and schools throughout the country to assist in the formation of such Branches in their representative schools, or to allow existing school natural history societies to become affiliated to the Selborne Society.

"In order to form a Junior Branch it is necessary that there shall be at least one adult to undertake the responsibility of the conduct of such Branch, who must be a full member of the Society and pay a minimum subscription of five shillings. With this exception, the members of the Branch will pay such subscriptions as may be decided upon by their own committee. (This may be fixed as low as is necessary in order to bring associateship within easy reach of even the poorest school children.) The rules as to Junior Branches are:—

"(1) That a Junior Branch may be formed, at a school or elswhere, of persons under age, upon the written application of an adult, who shall be held responsible for the conduct of such Branch, shall be a full member of the Society, and shall represent the Branch upon the Council.

"(2) That Junior Branches be subject to the general rules of the Society, with the following exceptions: (*a*) That the subscriptions of members of Junior Branches be fixed by their respective Committees, but only such members as subscribe 5s. per annum and upwards shall be full members of the Selborne Society. (*b*) That no payment be due from Junior Branches to the General Fund except one annual subscription of not less than 5s. (*c*) That each Junior Branch be entitled to receive the Magazine. (*d*) That the members of Junior Branches be styled Associates of the Selborne Society."

As a result of this invitation Junior Branches have been formed at Epsom College, Wellington College and Tonbridge School, in addition to three previously in existence at Dover College, "Quernmore," Bromley, and Hatfield.

In conclusion, the Council desires to tender its cordial thanks to all those who have so kindly assisted in carrying on the work during the past year, and would especially desire to record its gratitude to the honorary secretaries of the various branches, and to the gentlemen who have so kindly given their services as lecturers and as guides at the rambles both at head-quarters and on behalf of the branches.

For further details of the work of the branches and of the general work of the Society, the members are referred to the pages of the Magazine.

It should, however, he noticed that, owing to the reluctance of several of the branch secretaries to appear in print, the Society is deprived of the knowledge of the valuable work so often done by the branches, and secretaries are reminded that the Editor of the Magazine is always particularly desirous of receiving accounts of branch news and of branch meetings.

Professor Henslow having moved the adoption of the Report from the chair, Sir Robert Hunter, M.A., in seconding the adoption, referred to the Society's work, during the year past, in preserving the beauties of wild nature against the inroads of industrialism, so fast encroaching on the world's green places. A movement with which the Society was in strong sympathy was that for preserving monumental remains. He was pleased to say that a Bill for the better preservation of ancient monuments had been approved of by Parliament during the course of the past year. He was of opinion that such good work as this would be more and more the care of municipal and local authorities, not of the central Government, and spoke with approbation of the action of the London County Council in preserving a land-mark of old London, the misnamed Cardinal Wolsey's Palace in Fleet Street.

Dr. FINANCIAL STATEMENT FOR THE YEAR ENDED DEC. 31, 1899. **Cr.**

General Fund.

Receipts and Debts due.	£	s.	d.
To Subscriptions	148	14	9
,, Donations	34	19	9
,, Donation to Cost of Lectures	3	6	0
,, Sale of "Nature Notes"	76	18	11
,, Percentage on Receipts of Branches	19	18	5
,, Sale of Badges, &c.	1	11	6
,, Subscriptions for 1899, not paid	12	10	0
,, Amount due on Sale of "Nature Notes"	4	19	0
	£302	18	4

Expenditure and Liabilities.	£	s.	d.
By Rent	15	15	0
,, Secretary	25	0	0
,, Postage	9	3	8
,, Editorial Expenses	1	5	0
,, Stationery		19	3
,, Gratuities	1	0	0
,, Expenses of Annnual General Meeting	9	3	11
,, Printing	9	11	9½
,, Cost of "Nature Notes"	188	7	0
,, Loss on Lectures	5	18	6
,, Miscellaneous Expenses	1	0	6
,, Balance	35	13	8½
	£302	18	4

Deficit Account.

	£	s.	d.
To Surplus on 1899 Account	35	13	8½
,, Balance (being the deficit on Dec. 31, 1899)	37	1	2½
	£72	14	11

	£	s.	d.
By deficit as shown in 1898 Account	69	12	7
,, Bad debts previously credited	3	2	4
	£72	14	11

Mr. John L. Otter (Hon. Treasurer) spoke of the financial condition of the Society. He was pleased to announce that the Society's position was steadily and gradually improving. For the third year in succession they had a balance to their credit. The deficit of three years ago was now in a fair way of disappearing altogether. The balance to their credit on 1899 was £35 13s. 8½d. This reduced the deficit to £37 1s. 2½d. By a little exertion on the part of the members of the Society, by getting new members to join, and inducing old ones to increase their subscriptions, the deficit would be speedily wiped out. They would then have opportunity of doing work they had longed to do for years, but which had been debarred them through want of funds. One point to be observed was that the subscriptions of the branches had fallen off in number ; but this had been compensated for by increased subscriptions to the central body. This was rather an advantage than otherwise, for it was well that branches should control their own local expenditure, having regard, of course, to a due quota being paid to the central body. The receipts in all totalled £302 18s. 4d., leaving, as he had said, a balance of £35 13s. 8½d.

The Report and the balance-sheet were adopted.

Professor Boulger made a statement as to the Society's Magazine. He said he was going to utter what might be considered heresy in that room. It occurred to him that there was a defect in the work of Gilbert White, and that was that he was deficient in the missionary spirit. So long as he could convince his friends, Markwick, Pennant and Barrington, he was content not to force his opinions on any one else. They had, however, gone a little beyond that. They did not want to force people by weight of money, if they possessed it, but by way of influence. The Society during the year had received encouraging recognition in high places. He referred to the establishment of the Amenities Committee of the two Houses of Parliament. Sir Robert Hunter had spoken of the Magazine being open to other Societies. He always strove to have represented every phase and shade of Selbornianism, whether manifested within their own ranks or by the members of Societies in sympathy with them. He only wished that they had more workers and more funds. Very much had yet to be done by them, though their past record of achievement had not been a bad one. A great loss had been incurred by the Society through the death during the year of Sir William Flower, who, had he been alive, would, the speaker was convinced, have joined with him in denouncing the barbarous society fad of docking horses. If people refused to purchase horses which had been so treated, the custom would inevitably fall into desuetude. Professor Boulger then alluded to the obligations the Society owed to the heads of various public institutions. Their visits to the British Museum, for example, had been a great advantage during the winter. He had, as editor, a great many curious

objects sent in to him which the finders were unable to classify, and in matters of this kind the heads of scientific institutions such as the Museum were most obliging. They had, however, met with a reception from one public body which was experienced as a great grievance at the time, but might be yet susceptible of explanation. This was the interdiction on the giving of botanical lectures in Kew Gardens. It was a rule under the Parks Regulation Act which might be justifiably suspended. While it was desirable public parks should not be turned into debating grounds, nevertheless there was a difference between such lectures as they proposed giving and the aggressive utterances of Hyde Park orators. He was decidedly of opinion that in their case the rule should be abrogated. Many people wrote to him asking him why he did not increase the size and price of the Magazine; but it was impossible that anything could be done in this matter till the Society's deficit is wiped out. Any increase in size, however small, would mean double postage, which was certainly somewhat of a consideration. He claimed the forbearance of contributors for holding over lengthy articles for very considerable periods. This was unavoidable in the case of extended articles owing to limitations of space. Some people complained that the Magazine was too childish, others that it was too scientific. He thought a just medium might be struck by one class reading the matter of which the other complained. He was fortunate in his contributors, as he was constantly being supplied with material of considerable interest. He thought ornithologists were more facile with their pens than followers of other branches of natural history, which might explain the seemingly unjust preponderance of ornithological matter in the Magazine's pages. The Society had a wide scope. It was in sympathy with all other Societies of a scientific nature, and he was always glad to throw open the pages of the Magazine to outside contributors.

Professor F. E. Hulme, F.L.S., in moving a vote of thanks to the retiring officers, said it was a resolution which required no endorsement from him. They had done excellent service, and he was sure all present would join with him in extending them a hearty vote of thanks.

Mr. E. A. Martin, F.G.S. (Croydon and Norwood Branch), seconded the vote, which was cordially carried.

The next business was the election of officers for the ensuing year.

Mr. Martin, in moving the appointment of the officers nominated, begged leave to say a few words on a subject in which he was strongly interested—the exertions of the Croydon Branch to maintain Croham Hurst as an open space, a movement which had met with considerable appreciation. Their own resources were limited, but they intended to call on other Societies to combine to form the nucleus of a fund with which they would approach the Croydon public authorities, asking them

to make up the necessary amount for preserving Croham Hurst from spoliation (hear, hear).

A member of the audience seconded the election motion, which was carried unanimously.

The following are the officers elected for the current year :—

President.

The Right Hon. LORD AVEBURY, D.C.L., F.R.S., &c.

Trustees.

The Right Hon. LORD AVEBURY, D.C.L., F.R.S., &c.
G. A. MUSGRAVE, Esq., F.Z.S., F.R.G.S.

Vice-Presidents.

O. V. Aplin, Esq., F.L.S.
Prof. G. S. Boulger, F.L.S., F.G.S., *Hon. Editor.*
The Hon. Mrs. R. C. Boyle.
Mrs. Brightwen, F.E.S.
The Rev. Stopford A. Brooke, M.A.
The Right Hon. James Bryce, Esq., M.P.
Charles Burt, Esq., J.P.
The Rev. H. E. U. Bull, M.A.
Dudley W. Buxton, Esq., M.D., D.Sc., M.R.C.P.
The Right Rev. The Lord Bishop of Durham.
Sir Mountstuart E. Grant Duff, G.C.S.I., F.R.S.
W. Warde Fowler, Esq., M.A.
The Right Hon. Sir Edward Fry.
Sir Edward Grey, M.P.
The Rev. Professor Henslow, M.A., F.L.S.
Mrs. Arthur Hill.
Prof. F. E. Hulme, F.L.S.
Sir Robert Hunter, M.A.
The Rev. J. Kirkman, M.A.
G. B. Longstaff, Esq., M.D.
Mrs. Martelli.
Mrs. Charles Mathews.
Hon. J. Scott Montagu, M.P.
G. M. Murray, Esq., F.R.S., F.L.S.
G. A. Musgrave, Esq., F.Z.S., F.R.G.S.
Mrs. G. A. Musgrave.
Mrs. Percy Myles, *Hon. Librarian.*
J. L. Otter, Esq., *Hon. Treas.*
The Right Hon. Earl Percy.
Mrs. E. Phillips.
The Rev. Canon H. D. Rawnsley, M.A.
H. D. Skrine, Esq., J.P., D.L.
The Right Hon. The Earl of Selborne.
The Right Hon. The Earl of Stamford.
R. Marshman Wattson, Esq.
The Very Rev. the Dean of Westminster.
R. Holt White, Esq.
Wm. White, Esq., F.S.A.
The Rev. Canon Wilberforce, M.A.
A. W. Wills, Esq.

Council.

The President, Trustees, Vice-Presidents, Editor, Treasurer, Librarian and Secretary (*ex-officio*).

George Avenell, Esq.
Miss M. B. Danvers.
F. Downing, Esq.
Mrs. Durrant.
J. C. Float, Esq.
Mrs. F. E. Lemon.
A. H. Macpherson, Esq., B.C.L., M.A., F.Z.S.
A. E. Malaher, Esq.
Basil W. Martin, Esq., F.Z.S.
Edward A. Martin, Esq., F.G.S.
L. E. Taylor, Esq.
A. B. Wilkinson, Esq.

(With Representatives elected by the Branches.)

The Chairman then delivered a brief impromptu address as proxy for Lord Avebury. He agreed with Sir Robert Hunter that the existence of so many Societies with cognate aims was a great source of encouragement in well-doing to those who were endeavouring to defend Nature against those plagues and pests which sought to worry her out of existence. It was a considerable advantage to have the moral force of all these on their side, for though they were largely made up of the same members—(laughter)—still it looked well, and gave an impression that the whole brigade would be turned on to attack any single grievance. They found this immensely useful as a means of convincingly approaching the Legislature; for with such a combination they could so effectively deluge members with circulars as to produce the impression that the attention of the

whole country was directed to the question at issue. One hopeful feature of the success of their campaign against the Nature-haters was, that they had not found it necessary during the past session to summon a meeting of the Parliamentary Amenities Committee.

Mr. Bryce said that he must speak with considerable approbation of the useful effects of the Society for Checking the Abuse of Public Advertising. He was not sure whether he had given the organisation its full and correct designation, but that was most of it (laughter). This Society had done excellent work both by action and example in doing away with disfiguring advertisements. He thought it very desirable that those Societies which aimed at the preservation of Nature should be linked in broad sympathy with those which had for their object the care of historic monuments. Their aims were mainly identical—the retention for posterity of the beautiful nature spots and splendid monuments of their ancestors. The connection of natural history with political history was a very close one. Whoever desired to study natural evolution must also study the methods of man acting along with it. They both pertained to the state in which the country was before the great industrial tide swept over it as a flood. They boasted in modern days of the great increase of population, of production, of wealth, of resources, &c.; and they went off into dithyrambics about these things. He was doubtful about the benefit of increased population. It seemed to him that it was better that people who lived in the world should be happy and comfortable than that there should be more of them (laughter and applause). It was with alarm he saw the spread of an unbeautiful industrialism. They had to go for many miles now from the industrial centres in search of Nature's delights. Poetical geniuses nowadays had round them less material for inspiration than in John Milton's days. Modern poets had less opportunity of becoming imbued with the charms of country sights and sounds than their ancestors of the fifteenth and sixteenth centuries. This reacted on the whole mass of the population. The state of things which made more and more difficult of attainment the beauty and quiet which developed men's poetic faculties, was a loss to the entire nation, which would become more sadly evident as time went on. Nature was like the Sibylline books—the less there was left of it the more precious it became. If societies like their own had been in existence in years past much might have been effected in the way of checking Nature's desecration. He extended the term desecration to so-called "restorations," which were often almost as bad in their effects as demolition itself. One present-day evil particularly depressed him, and he did not know whether it was possible to find a remedy for it—this was the destruction of rare insects, animals and plants. He was neither an entomologist nor an ornithologist, and accordingly did not know how far the rule extended; but, for one thing, the number

of rare birds must be decreasing rapidly. Sometimes the shooting of these was the only record they had of them. Some of the rarest animals, species like the zebra, the white rhinoceros, and the small lynx had become practically extinct. This, unfortunately, applied to rare plants also. A great danger in the latter case was the habit of the confiding collector, when he came on a unique specimen, of making the discovery known, say for purposes of exchange. This publicity had often the most serious results. About forty years ago there was discovered between Dalwhinnie and Dalnaspittle, on the borders of Inverness-shire, a kind of blue heath (*Menziesia cærulea*) which had disappeared from human view for a number of years. Between 1850 and 1855 it was come upon in considerable abundance, and it was such a beautiful plant that the finder in his delight injudiciously made his discovery and its habitat public. Next spring a Scottish market gardener came along and dug it all up by the roots. He did not know what punishment would be adequate for that man, who had probably long since passed away and received the reward of his deeds. It was melancholy to think that the process of extinction in such cases was proceeding rapidly. Something, it is true, was being done to save the aquatic plants, but the plants of the Scottish Highlands, the Lake District and Wales were disappearing very rapidly. Some of them, indeed, remained in inaccessible places, but this merely because they were out of human reach. He wished to recommend to their sympathetic consideration whether something could not be done by means of the Legislature. Austria had done something, and he thought that in Switzerland also measures had been taken for the preservation of rare plants. He thought this idea deserved their most serious consideration ; and it might be extended to birds, though some little had already been done for the preservation of wild birds, especially seabirds. He complimented the Society on its flourishing condition and on the growth of its balance. The favourable position of the Selborne Society and kindred fraternities was a strong evidence of the growing sensibility of the masses of the people to Nature's beauties, and the necessity for preserving them (loud applause).

Professor Boulger, in proposing a vote of thanks to the Chairman, said that Mr. Bryce had taken up the important duties of Chairman at very short notice. Mr. Bryce had said that he had no address to give them, but he (Professor Boulger) ventured to think Mr. Bryce had given them a very excellent address indeed. They might congratulate themselves in having found such a splendid substitute for Lord Avebury on such brief and insufficient notice.

The vote was seconded by a member of the audience and carried with enthusiasm, and Mr. Bryce briefly responded.

After an interval for refreshments, Mr. Fred. Enock, F.L.S., F.E.S., gave a demonstration illustrated by his latest series of photographs from living insects, which was fully appreciated by the audience.

Mr. R. B. Lodge followed with his beautiful series of photographs entitled "British Birds at Home and Abroad."

The Rev. Professor Henslow, M.A., F.L.S., exhibited several sets of prints showing the evolution of florists' flowers which he explained during the evening.

On the first floor microscopes were exhibited by members of the Quekett and Royal Microscopical Societies, and a series of pictures and objects of interest, kindly lent by F. W. Ashley, Esq., F.Z.S., Professor G. S. Boulger, F.L.S., F.G.S., Mrs. Brightwen, F.E.S., J. E. Cooper, Esq., Fredk. Enock, Esq., F.L.S., F.E.S., &c., the Rev. Professor Henslow, M.A., F.L.S., Ernest Hinton, Esq., A. H. Macpherson, Esq., B.C.L., M.A., F.Z.S., Edward A. Martin, Esq., F.G.S., F. Primrose Stevenson, Esq., L. E. Taylor, Esq., Miss Woodd, and others.

Among the exhibits were several water-colour drawings of a well-nigh forgotten naturalist, the late Mr. Edward Adams, who accompanied the *Investigator* and *Enterprise* of the Franklin Search Expeditions as assistant-surgeon and naturalist, between the years 1848-50. The drawings in question were made of the various places of interest which he visited in the Arctic regions, where he also formed a considerable collection of birds. Some of these are deposited in the Natural History Museum, whilst others were presented to his ornithological friends, including Mr. John Gould and Mr. G. R. Gray, who dedicated *Colymbus Adamsi* in commemoration of Mr. Adams's labours. Subsequently Mr. Adams was gazetted full-surgeon to the steam sloop *Hecla*, but died of fever at Sierra Leone. The drawings were lent by F. Primrose Stevenson, Esq.

SELBORNIANA.

"A Vanishing Village."—Mr. A. Leonard Summers of Richmond Hill, Surrey, writes: "In the April number of *The Surrey Magazine* I wrote an article under the above title, on Petersham, reviewing its glorious past, hinting at its possible inglorious future, and pointing out that the pretty little old-world village was fast losing its former rurality, degenerating, and also losing its natural beauty. I regretted the disappearance of the two mansions called 'Petersham Lodge,' the house owned by Sir George Scott, K.C.B., till 1841, and 'Bute House,' the one-time seat of the Marquises of Bute, and the obliteration of other 'landmarks of history' from time to time. I also deplored the fact that one of the few remaining old historical mansions—'Sudbrook,' the former residence of John, Duke of Argyll—had been converted into a hydropathic establishment, and its romantic old grounds cut up to form golf-links for a local Club.

"As you probably remember, in 1895 Bute House was

threatened with destruction, when the Selborne Society and the Open Spaces Society jointly urged the Government to purchase the Bute estate to save it from the ruthless builder. Notwithstanding the energy displayed by the Societies referred to, this fine old place has been razed to the ground—and its once lovely grounds are at this moment being 'prepared' to receive an 'Institute'! If this is allowed to be erected, it will obviously still further assist in 'vanishing' Petersham's village traits; and I would advocate prompt action in such matters, to stay the 'hand of the spoiler' ere it is too late. In addition to the above facts, many of the handsome old trees in the long Dysart avenue have recently been felled in a 'thinning-out' process, quite altering the previous aspect, and a new red-brick lodge has been erected at the avenue's entrance, completely obscuring the fine view hitherto obtainable from the main road. Again, of late years, one or two inartistic coffee houses, &c., have been built, tending to modernise the village, of course. All this, to say nothing of any amount of the approved up-to-date iron fencing and wicket-gates now to be seen throughout the neighbourhood, will enable you to understand me when I assert that, in addition to Petersham's undoubted 'vanishing' from a historic point of view, it is also decidedly losing its rurality and natural beauty."

Heads of Stuffed Animals.—A member writes :—"I should feel very grateful if some of your readers would give me some conclusive reasons why a lover of animals should not wear the stuffed head of any animal as an ornament. Of course I would not wear anything of the kind myself, but I want to be able to give good reasons to those who do not see any harm in wearing them, why they should not do so."

Conference on Big Game.—It is with great pleasure that we reprint the following from the *Daily Mail* of May 30 :—

"Great Britain, Germany, Spain, the Congo Free State, France, Italy and Portugal have agreed, we learn from an official paper just issued, to a fifteen years' convention, which binds one and all to enforce within their respective territories rules which deal with animal life in the following zone :—

"North.—20th parallel of latitude (*e.g.*, north of Timbuctoo on the west and Dongola on the east).

"West.—Atlantic Ocean.

"East.—Red Sea and Indian Ocean.

"South.—A line following the northern boundary of German South-West Africa from its western extremity to its junction with the Zambesi, and thence along the right bank of that river to the Indian Ocean.

"This Convention, in which improvements may be made by common accord, also urges the establishment of large game reserves, close seasons, the prohibition of unlicensed big game

hunting, and unsportsman-like methods of destruction, the imposition of export duties on skins and hides, the enforcement of health measures, and so forth. Especially are the young elephants to be safeguarded. Altogether the Convention seems to be a broad-minded measure. The only question is will it be honestly enforced?

"This is how the various animals, birds and reptiles are affected:—

"To be always preserved. (A) On account of their usefulness: Vultures, the secretary-bird, owls, rhinoceros-birds or beef-eaters (*Buphaga*). (B) On account of their rarity and threatened extermination: The giraffe, the gorilla, the chimpanzee, wild asses, the white-tailed gnu (*Connochætes gnu*), the mountain zebra, elands (*Taurotragus*), the little Liberian hippopotamus.

"Not to be destroyed (*a*) when young, or (*b*) females, accompanied by young. The elephant, rhinoceroses, the hippopotamus, zebras, other than the mountain zebra, buffaloes, antelopes and gazelles, ibex, chevrotains (*Tragulus*).

"To be destroyed, but only limited numbers. The elephant, rhinoceroses, the hippopotamus, zebras, other than the mountain zebra, buffaloes, antelopes and gazelles, ibex, chevrotains (*Tragulus*), the various pigs, colobi and all the fur-monkeys, aard-varks (*Orycteropus*), dugongs (*Halicore*), manatees (*Manatus*), the small cats, the cheetah (*Cynælurus*), the serval, jackals, the aard-wolf (*Proteles*), small monkeys, ostriches, marabouts, egrets, bustards, francolins, guinea-fowl and other 'game' birds, large tortoises.

"To be destroyed, within sufficient limits. The lion, the leopard, hyænas, the hunting dog (*Lycaon pictus*), baboons (*Cynocephalus*) and other harmful monkeys, the otter (*Lutra*), large birds of prey, except vultures, the secretary-bird, and owls, crocodiles, poisonous snakes, pythons.

"All the above are officially styled 'harmful' animals; hence the edict against them."

Wicken Fen.—At the Annual Meeting Sir Robert Hunter referred to the threatened drainage of Wicken Fen, the home of many rare plants and animals, as to which there has been a long and interesting correspondence of late in the *Standard*. We are glad to know that the owners of several scattered portions of the Fen have transferred their interests to the National Trust, thereby probably effectually preserving the whole from the threatened danger.

Horses on the Battlefield.—It is stated that Lord Wolseley has at length issued an order for the destruction of wounded animals on the field of battle.

The Law as to Rat-fights.—The following practical comment on a recent case appeared in the *Yorkshire Post* for May 5: "A ruffian at Wormwood Scrubbs who was showing rat and

ferret fights in a penny gaff has been discharged by the West London Magistrate because the wanton cruelty for which he was prosecuted was done to the rats and not to the ferret. The ordinary law as to cruelty protects only domestic animals, and whatever be the status of ferrets, rats are not to be considered as domesticated. But Mr. Lane properly described the show as 'a brutal and demoralising display,' and we are surprised that neither he nor the Society for the Prevention of Cruelty to Animals should have remembered that a successful prosecution might have been instituted on other lines. By the 12 and 13 Vict., cap. 92, sec. 3, 'Every one who keeps or uses, or permits to be kept or used, any room or place for baiting or fighting any bull, bear, badger, dog, cock, or other kind of animal, domestic or wild,' commits an offence punishable by a fine of £5 for every day on which the offence continues. A popular impression that the law is weak in regard to the wanton ill-treatment of creatures *feræ naturæ* renders it very desirable that the prosecution should be renewed."

HOW SCENERY IS MADE.

VI.—Igneous Rocks.

THE ordinary traveller, passing through Scotland and England, might go from John o' Groats to the Land's End and yet be quite unaware of having passed by, or even over, the site of many an ancient volcano. Nevertheless, they have existed in abundance through many geological epochs; and the length of time from the present day to the period when the last great outburst occurred and poured out the basalt as lava, producing Fingal's Cave and the Giants' Causeway, is not so great as that preceding it and the previous display.

Volcanoes, as we know them in existence now, may be exemplified by such as Vesuvius, Etna, or the extinct but still perfect ones in Central France or the Eiffel. Such once existed in England, but aërial and marine denudation has destroyed all visible signs of such cones, consisting of ashes thrown out around the orifice, and nothing but the "cores" are left, consisting of solid stumps or "necks," which, when they were molten, lay deep down beneath the surface.

The scenery, therefore, of a volcanic country of to-day, so far as it is affected by conical mountains of lava, is totally different from that where nothing remains but these solid cores of the original vent. They are often covered with soil and clothed with grass, herbage or trees, and only reveal themselves as more or less conical hills, such as the "Knock," in Ayrshire, and the hill of Penmaenmawr. If the rock itself be

exposed, then its "igneous"* character can of course be detected.

Numerous beds or strata of various kinds of igneous rocks are found to be alternating with clays, &c., pointing to the fact that the volcanoes which poured them forth were under the sea; so that the clays were afterwards deposited upon the beds of lava. Then the whole became subsequently upheaved, forming dry land, so that the old sites of the volcanoes can now be discovered by geologists. As examples of elevated igneous rocks, Cader Idris, near Barmouth, has its summit composed of consolidated rocks, once molten; but the actual formation of the crater is all gone.

Existing volcanoes may be either isolated as gigantic cones, with smaller ones formed on their sides, as Vesuvius; or they may be clustered and small, called Puys. These were soon burnt out and are now extinct. They have often converted their craters into lakes. Such may be seen in the Eiffel district near Coblenz.

Vast plateaux formed by the out-pouring of lava constitute a distinct feature in some modern volcanic districts, such as Iceland. Nothing of the nature of a conical volcano now exists in the British Isles. Who would suspect that Devonshire was once and for long ages the scene of great and numerous active volcanoes? So completely have they disappeared that it is only the harder rocks which have resisted denudation to a rather greater extent than others, so that elevations are left, forming an undulating country, covered with orchards, beneath which lie the remnants of the old vents.

Similarly in Scotland numerous submarine volcanoes poured out their lavas, now recognisable in the uplands and moorland districts, &c.

As examples of old "necks" of volcanoes, Arthur's Seat, near Edinburgh, is one; the Bass-rock, near the shore of Canty Bay, and Penmaenmawr, are others.

One of the most remarkable features of volcanic rock is the columnar character of basalt, which is lava cooled slowly. It is well seen in Fingal's Cave, and clusters of pillars arise out of the ground near the top of Cader Idris. A large quarry is full of them near the Rhine, and the pillars are used for posts all along the bank near Coblenz.

Although ancient volcanoes, as far as they are preserved in our islands, afford no striking or characteristic features, the causes which gave rise to the explosive outbursts forming volcanoes, may play a very important part in the upheaval of rocks, crumpling and contorting them, and so finally making important scenic effects, as we all know in Switzerland.

It may, therefore, be desirable to explain briefly why volcanoes arise at all.

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* From the Latin *ignis*, fire.

The primary cause appears to be local shrinkings of the crust of the earth. It is well known that temperature rises about 1° for every 100 feet of descent; so that at some unknown depth all substances of the earth must be molten, unless pressure or other influences intervene to alter the above rate of increase of temperature. As the earth parts with its heat by radiation, and has done so to a far greater extent in former times than now, the superficial layers must contract, and so get crumpled up to adjust themselves upon the underlying rocks.

Splendid illustrations of such occur, like a series of waves, along the coast of Cornwall and Pembrokeshire; and may often be seen on the lofty peaks of Switzerland, &c. The generally parallel lines of mountain ranges follow roughly these waves in the rocks. The heat produced by contraction—the force being converted into heat, just as when a gimlet is bored into hard wood it gets hot—finds vent in outbursts of molten matter aided by the agency of expansive gases and steam. Volcanoes are the result. As almost all active volcanoes are situated near the coast, and as Vesuvius, for example, when quiet, still pours out water vapour, it is reasonable to suppose that the sea has access through cracks to the subterranean regions and so generates steam, which is thus probably the main cause of explosions. If the disturbance be, comparatively speaking, superficial, small Puys, which soon get exhausted, are the result. But more deeply-seated and more permanent disturbances give rise to permanent volcanoes, forming sometimes gigantic cones, as in the Andes.

The relative ages of volcanic disturbances through past geological history can be pretty well determined by means of the sedimentary rocks through which they have issued. Thus, while the Malvern hills are some of the oldest in the world, the Alps and Himalayas are almost, so to say, of yesterday's creation.

The value of lava and deeper-seated igneous material is very great. Thus the former is now seen as basalt, one of the best and hardest of materials for road metal; while the deep-seated granite is invaluable for structural work where ornamental pillars, &c., are required, to which a high polish can be imparted. Great oblong crystals of felspar, red or white, are often seen in granite. These were formed as it cooled.

Granite, though so hard, readily decomposes on exposure. Its main ingredients are quartz, felspar and mica; the felspar decomposing into powder is called kaolin, and when washed clear of other ingredients it is invaluable for making china, porcelain, pottery, &c.

Though diamonds are usually obtained from alluvial washings, those from Kimberley are extracted from the neck of a volcano; but the conditions under which they, like plumbago, were made from vegetable matter are unknown.

GEORGE HENSLOW.

NATURAL HISTORY NOTES AND QUERIES.

Long-tailed Field Mice.—It may interest Mr. Daubeny to know that my long-haired cat has a regular preserve of the above in the garden here, and kills them as much, and hunts them as eagerly as he does the house mice, and in some cases I have known him eat them. And some friends of mine in this neighbourhood have had two long-haired cats die from a surfeit of field mice. Is it that these cats kill and eat what the short-haired cat will not?

Lamorna, Torquay. LYDIA PENGELLY.

Squirrels and Rooks.—That squirrels eat the eggs of small birds I am well aware, but I never before knew of one having the impudence to rob the nest of a rook. About a month ago a lad in my garden saw a squirrel deliberately run up a big elm, and, in spite of the remonstrances of the owner, abstract, and devour, an egg! By the way, a small colony of rooks that nested in the beeches close to the house have this year deserted me. Why is this? I feed them twice a day, and they evidently know me well.

Nascott House, Watford, GEORGE ROOPER.
May 3, 1900.

Do our Bats eat Birds?—Walking through a Suffolk cover with the juvenile daughter of my host on Good Friday, I was shown a wren's nest, out of which she had the day before extracted a bat. Not caring to again undergo the clammy sensation, but anxious to know if the animal had returned to its strange retreat, she asked me to investigate. This I did, and pulled out a dead, half-eaten, young, unfledged bird. Do you think this was the work of the bat?

West Lodge, Blackheath, JOS. F. GREEN.
May 16, 1900.

[The *pipistrelle*, our commonest bat, when in captivity, will eat flesh.—ED. *N.N.*]

Are Woodpeckers Ovivorous?—Last week I received a perfect dead specimen of a mature Great Spotted Woodpecker (*Picus major*). It came from my brother-in-law, who occupies Benacre Hall, Wrentham, and was a surprise, as I know how carefully he protects all rare birds on his estate. It appears, however, that one of his keepers noticed three eggs had gone from a pheasant's nest, so set a trap, and unfortunately caught this woodpecker. Curiously enough, no eggs have disappeared since, but I should hardly think the bird was the culprit.

P. viridis and *P. minor* are exceedingly common at Benacre, but I have never seen *P. major*.

West Lodge, Blackheath, JOS. F. GREEN.
May 20, 1900.

Cuckoo Sucking Eggs.—Mrs. Randles, of Bryn Afon, Wrexham, sends eggs, from two nests, which have undoubtedly been sucked, with the query as to whether it is the work of a cuckoo. It is an old superstition that the cuckoo sucks eggs to clear "her" voice; but this is calumny.

Mimicry in Starling, &c.—In reference to note on this subject in the May issue of NATURE NOTES, I may state that, at least since I came to reside here over five years ago, a pair of starlings have made the place their permanent home. They construct a nest in a wooden ventilator that projects a few inches outside a stable wall, and there rear two and even three broods yearly. The power of imitation of the male bird is very extraordinary, and is exercised at all seasons of the year, whether the birds imitated are in song or not. His mimicry of the twittering of the swallow is so perfect as to deceive a practised ear. He is an adept in reproducing portions of the song of blackbird, thrush, robin, &c.

Bridgetown, Wexford, PAUL F. KEHOE.
May 7, 1900.

Starlings in a wild state have only their natural notes—you can hardly call it a song. It is, however, composed of such a variety of sounds that other birds' notes more or less appear to be copied. In captivity these birds are as good adepts in mimicry as any parrot. With respect to a thorn found sticking through the bottom of a nightingale's nest, I have seen some dozens of such nests, but never with a thorn protruding, as supposed by your correspondent. I cannot help thinking, with those who have made a life study of birds and animals, that such incidents ascribed to them are often at utter variance with nature.

41, *Heath Street, Hampstead, N.W.* J. E. WHITING.
May 11, 1900.

Magpie's Counting Powers. Thorn in Nightingale's Nest.—I should like to say a few words on these two points. I do not know the name of George de Roy; but certainly the story which Mr. Mackie, in his interesting paper, has told of magpies counting up to three and no further was told many years ago of *rooks*. Which is correct, or whether both or either, I do not at all know.

As to the curious fancy of a thorn in a nightingale's nest, I am reminded of a certain duet, which I must have heard sung at least fifty years ago, "As it fell upon a day." I do not know who wrote the words, but they have the usual fancies of the female nightingale singing, and singing for sorrow:

"She, poor bird, as all forlorn,
Leaned her breast up till a thorn"—

Is this the mythical thorn in the nightingale's nest?

I may just add that if such writers could have watched the perky and sprightly movements of a nightingale as on my lawn last month, they would have reconsidered their verdict as to the melancholy of the nightingale, even without Coleridge's eloquent protest.

Otham Parsonage, Maidstone. F. M. MILLARD.

[No doubt the piece of folk-lore mentioned by the Rev. C. A. Clutterbuck has its origin in the song beginning—

"As it fell upon a day
In the merry month of May,
Sitting in a pleasant shade
Which a grove of myrtles made,
Beasts did leap, and birds did sing,
Trees did grow and plants did spring;
Everything did banish moan
Save the nightingale alone;
She, poor bird, as all forlorn,
Lean'd her breast up till a thorn,
And there sung the dolefull'st ditty,
That to hear it was great pity:
'Fie, fie, fie!' now would she cry;
'Tereu, Tereu!' by and by;
That to hear her so complain,
Scarce I could from tears refrain,
For her griefs, so lively shown,
Made me think upon mine own."

This is often attributed to Shakespeare, appearing in "Sonnets to Sundry Notes of Music" in the volume called "The Passionate Pilgrim," published with his name in 1599. It is, however, by Richard Barnfield (born 1574), of Brasenose College, Oxford, and was published by him in 1598. Its suggestion is Virgil, Georgics, Book IV., ll. 511-515:—

"Qualis populnea mœrens Philomela sub umbra
Amissos queritur fetus, quos durus arator
Observans nido implumes detraxit: at illa
Flet noctem, ramoque sedens miserabile carmen
Integrat, et mœstis late loca questibus implet."

Dryden Englishes the lines:—

"So, close in poplar shades, her children gone,
The mother nightingale laments alone,
Whose nest some prying churl had found, and thence
By stealth, convey'd th' unfeather'd innocence;
But she supplies the night with mournful strains,
And melancholy music fills the plains."

The melancholy of the nightingale's song is a matter of temperament in the hearer, and the Latin language, and that of poets, children and cockneys, is somewhat regardless of sex, as *e.g.* in the cases of the robin and the wren, cat and dog, &c. A London servant-girl thought a hare was "the gentleman of the rabbit"! --ED. *N.N.*]

A Brave Blackbird.—One morning last spring I heard a great disturbance among the birds in our garden, so I went to the window to see what was the matter. The window looks out on to a thick ivy hedge that forms a very popular nesting-place for the birds in our neighbourhood. I saw a large cat climbing a tree close to the hedge, much to the distress of the birds, who were fluttering about uttering shrill cries of distress. As she approached the nest of a blackbird, the cock bird flew down and pecked her head with such vigour that she promptly retreated to the bottom of the tree: after pursuing her round the side of the house, alternately pecking her and pulling her bushy tail, he returned to the top of the hedge still scolding violently. Soon the cat appeared round the other side of the house, but as soon as he perceived her, he recommenced the attack with such energy that she simply fled, and did not stop until she had cleared the wall and taken refuge in the next garden. He then perched himself on the top of a clothes-prop so that he could view the whole neighbourhood, in case of another attack being attempted by the enemy, and answered the frightened cries of his mate with the most reassuring song of victory I have ever heard. Later on in the day I examined their nest, and found it contained two fine young birds, nearly fledged.

Nower View, Dorking, Surrey. Y. A. PITTS.

"Slimness" in the Sparrow.—While lunching in Kew Gardens on May 5, I noticed that most of the sugar-basins on the tea-tables were covered with saucers. Two, however, were not so, and, having discovered this fact, sparrow after sparrow "made a flying march" and "commandeered" as large lumps of sugar as they could carry.—[ED. *N.N.*]

Migrants.—For about eleven years we have noticed three or four couples of shieldrakes arriving every April, and one year we found two of their eggs in a rabbit burrow (where these birds habitually lay their eggs): these were addled. Probably they had been disturbed in this burrow, as they generally lay from ten to twelve eggs. Naturally, we should expect to see the number of our visitors increase, but possibly they may cease to frequent these sea-side links, where every effort is made to exterminate the rabbits. The shieldrakes are very handsome birds, and may be seen sometimes on the shore, or walking and feeding on the links in the very early morning. This year they arrived about April 15. The cuckoo was late this year, and was only seen on April 29 and heard the following day. To-day (May 6) it has never ceased its cry since early morning. The first swarm of winged ants invaded the garden on April 26.

West Kirby, Cheshire. M. SYBILLA DALGLISH.

Humming-bird Hawk-Moth (*Macroglossa stellatarum*).—In the January number of NATURE NOTES I recorded the late appearance of *Macroglossa stellatarum* (November 18). I am now able to write of this moth's unusually early visit amongst the wallflowers in the bright sunshine, poising over them and extracting the honey with its long proboscis. Its appearance in May is, I think, most unusual, as they are rarely seen till our gardens are gay with petunias, asters, stocks, and phloxes, to all of which flowers they are very partial. Might it not have been the very same moth let out of our window that November day, which had hibernated in some sheltered corner near, again revived by the warm May

day sunshine? We have had a small tortoise-shell butterfly in our bath-room from October till the second week in April, quite asleep and unaffected by gas and steam, till one warm day it awoke, when it was removed to the conservatory, as being a safer and more congenial place, from which after a day or two it disappeared, but I have often known the small tortoise-shell (*Vanessa urticæ*) winter indoors, but their spring life is short, and they soon die.

Teignmouth, Devon. C. E. FARLEY.

SELBORNE SOCIETY NOTICES.

BRANCH PAYMENTS, 1899.

	For Magazines.	*Tithes and Donations.*
Abinger and Shere	2 5 6	2 10 0
Barmouth	0 8 10	0 15 0
Bath	7 0 0	3 0 0
Birmingham	12 13 6	3 6 0
Brighton	2 9 10	
Clapton	5 1 10	1 1 0
Croydon	4 7 9	0 16 8½
Ealing	6 5 8	6 3 2
Farnham	2 5 6	2 3 0
Halifax	1 14 8	0 8 0
Kensington (subscriptions)	10 0 0	
Malvern (includes arrears)	10 0 0	
"Markwick" (subscriptions)	1 2 6	
Midhurst (includes arrears)	6 8 4	
Northern Heights	9 6 4	2 12 3
North Somerset	2 5 6	2 6 9
Petersfield (subscriptions)	0 12 6	
Rape of Lewes	3 0 8	0 9 10
Southsea (subscriptions)	1 19 8	
Sutton (includes arrears)	5 15 0	
Weybridge (subscriptions)	1 2 6	
Wimbledon and Putney	3 15 10	5 0 0

Council Meetings.—The next meetings of the Council will be held at 20, Hanover Square, on Tuesdays, June 5 and 19, at 5.30 p.m.

FIELD CLUB RAMBLES.

April 21.—The first outing of the Field Club took place in beautiful weather, when a party of fifteen members and friends, under the leadership of Mr. C. Nicholson, enjoyed a pleasant ramble in the neighbourhood of Chingford. On leaving the station the party proceeded across the plain, and through the fields behind the "Woodman" to Gilwell Lane. In some fields close to Yardley Hill, the new addition to the Forest, a number of cowslips were gathered, and the party then wended their way, *via* Sewardstone Green, field paths, and Bury Wood, to the Royal Forest Hotel, where tea was taken about 6 p.m., after which many of the party returned home. Some, however, remained to listen to the nightingales about Connaught Water, where they are always to be heard in some numbers at this time of year.

April 28.—The second ramble took place on April 28, when Sundridge Park Station was the place of meeting. The weather was fine, and a most delightful walk was taken to Chislehurst Common *via* Sundridge and Camden Parks, now unfortunately falling into the hands of the builder. After tea a most delightful stroll through the orchards of Perry Street and St. Mary Cray brought a most successful afternoon to a conclusion. The guide was Mr. A. B. Wilkinson. Seven members were present.

May 5.—Kew Gardens. In conjunction with the Battersea Field Club and the Hampstead Astronomical and Scientific Society, the party numbered sixty, and the guide, Professor Boulger, endeavoured to give a peripatetic lecture on

Adaptation. The Tropical Aroid House was closed, and, after visiting the Succulent House, the party were informed that lecturing of any kind was forbidden in any part of the grounds. After a stroll through the Alpine garden, tea, and a visit to the Azalea dell, they accordingly dispersed.

May 12.—The beautiful hillside paths in the neighbourhood of Woldingham and Oxted were visited on this occasion, tea being obtained at Botley Hill. Large numbers of wild flowers were obtained, and a most interesting geological description of the district was given by Mr. E. A. Martin, F.G.S.

May 19.—This ramble was arranged by the Croydon Branch, the guide being Mr. Duff Smith. Starting from Sanderstead Station, a circular route was taken, Purley Downs, Sanderstead Church and Woods, and Crohamhurst being included.

FORTHCOMING FIELD CLUB RAMBLES.

June 9.—Ramble to Roundabout Wood and Petts Wood, Kent. Leaving Victoria, 2.42; Holborn, 2.37; St. Paul's, 2.40. Take single ticket to Bickley. Walk *via* Old Race Course, Petts Wood and to Chislehurst Common. Tea at the Crown at 6 p.m. Return from Chislehurst, Bromley, or Bickley. Frequent trains. Guide, Mr. M. Mühlberg.

June 16.—Farthing Down and Coulsdon Common. Charing Cross (S.E.R.), 2.5; Cannon Street, 2.19; East Croydon, 2.44. Book return to Purley, but go on to Coulsdon, where alight. Tea on Coulsdon Common. Return from Purley (S.E.R.), 7.20, 8.8, 9.5. Conductor, Mr. E. A. Martin, F.G.S.

June 23.—Ramble round Southfleet. Train leaves Holborn Viaduct, 2.25; St. Paul's, 2.28, arriving at Southfleet at 3.30. Cheap return tickets, 1s. 6d. Guide, Mr. A. B. Wilkinson.

June 30.—Hendon to Harrow, *via* Pipers Green and Preston. Train leaves Moorgate Street at 2.19; King's Cross (Met.), 2.27, arriving at Hendon 2.56. Single tickets, 7d. Walking distance, 5 miles. Guide, Mr. E. A. Nash.

July 7.—St. George's Hill, Weybridge. Waterloo (main line), 2.29, Weybridge, 3.7. Return tickets, 2s. 10d.; single, 1s. 7d. Dr. H. Willson will be the guide to a ramble through the woods and commons on or near St. George's Hill. Tea at Weybridge, 5.45. Afterwards walk by river or visit the famous Grotto in Oatlands Park.

ANSWERS TO CORRESPONDENTS.

W. F. Carter.—The breeding of butterflies is no new thing. Collectors constantly resort to it for the finest specimens in their cabinets. See "The Larvæ Collector's Guide," published by J. and W. Davies, Dartford. Rare or exotic insects escaping might interfere with the studies of the geographer.

James Hiam.—Space does not permit the printing of phenological observations for a single year at one locality: they have little value until extended over a term of years.

Harold Berryman.—Quite right.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 127. JULY, 1900. Vol. XI.

SELBORNIANA.

Clifton and Durdham Downs.—Though the Corporation of Bristol are virtually trustees of these beautiful downs on behalf of the public, it appears that, as is too often the case under similar circumstances, the ranger is allowed to do pretty much as he likes, and considers the convenience of pedestrians and sportsmen more than the preservation of a beautiful open space close to a large city. The following letter from Mr. E. J. Gibbons, of Clifton, appears in the *Western Daily Press*:—

"It is difficult to understand why this delightful resort should be denuded of most of its natural beauty, the beauty, that is the joy of the artist and of the naturalist. Why should those graceful undulations which are the charm of a landscape be levelled to a park-like monotony, and consecrated to cricket, golf, football, hockey, and to those who wander there at night?

"There are, happily, those who, while they acknowledge the value of out-of-door sports, yet maintain there exists an important minority who find pleasure in intellectual pursuits, and who have some claim to consideration. Such look with concern and regret at the performances of the so-called *improver* employed by the Downs Committee. Ruthless hands some time ago cut away a number of exquisite flowering plants and shrubs—the clematis, wild briar, and the rich undergrowth that concealed plants of the greatest value and interest to the botanist. One whitethorn bush, I can well remember, in which a pair of nightingales had hatched their brood, did not escape.

"I am old enough to remember the flower-decked dells of our beautiful Downs, the furze in patches large and broad, the purple heather scattered in rich abundance, mixed here and there with wild thyme and St. John's wort, the brake fern bold and strong, in some places too much to be encountered. The heath galium and yellow bedstraw lit up the green sward. The spring brought with it wild hyacinths, anemones, and graceful columbines. In summer, rock-rose and the dainty hare-bell were luxuriant, and free from the hand of the improver. Many beautiful grasses, now rare, were common then. Now, in a few sequestered spots alone anemones, wild hyacinths, and columbines struggle for existence, and perhaps will do so until their place is marked out for a cricket pitch.

"I remember, too, that linnets found a congenial home upon our Downs, and reared their little ones without undue intrusion. In autumn time goldfinches came

in flocks, when thistles were abundant. Yellow hammers, bunting, and meadow pipits haunted the gorse. In spring and autumn came the wheatears on their migratory excursions. Often across the water came the green woodpecker, a golden plover, and occasionally a jack snipe. It would, however, occupy too much of your valuable space to enumerate the birds, the plants, the moths and butterflies that disappeared before the remorseless hands of the Downs Improvement Committee, men who have no eye for the beauty that lurks in every nook of our lovely Downs, and who are robbing Nature of her most precious jewels in the face of officialdom. All that can be done is to protest against such action.

"One consolation, however, remains, for which we must be thankful. It is, indeed, a consolation to know that the free, pure air that comes bounding across the broad Atlantic, giving health and strength to all who seek it, cannot be improved upon, or handled by a Corporation."

Richmond Old Deer Park.—The decision of the Government to erect a physical laboratory in the Old Deer Park is arousing much protest. Part of the park is already given over to athletics, golf, motor-car exhibitions, &c.; but the site selected for the proposed building is only 140 yards from the boundary of the Queen's Cottage Grounds, which, it was expressly stated in 1898, by the Office of Works, it was intended to preserve in its natural condition as a sanctuary of wild bird life. Are there not many less objectionable sites that might have been selected?

Animals' Heads as Ornaments.—Mr. J. L. Williams writes:—

"Regarding 'A Member's' enquiry in June Nature Notes, as to reasons against the wearing of animals' heads as ornaments, these should be perfectly obvious to all who have the interests of the animal world at heart. To commence with, surely the fact of it being necessary to rob an unfortunate creature of its life before its head can be worn, is, of itself, sufficient reason against the revolting fashion. Again to purchase heads, wings, feathers, &c., of animals and birds for any purpose whatever, is to create a demand for them, which is sure to be met by continued slaughter. And even if not actually *purchased*, the example set is likely to encourage others to do so. It is unnecessary to take up any further valuable space in this instance, since the whole thing may be summed up and condemned upon grounds of common humanity, and 'A Member' should never be at a loss for arguments against this quite indefensible practice."

An Experiment to be Avoided.—A correspondent calls our attention to the following letter in *Country Life* for May 5, headed "A Plague of Magpies." "It could do no harm trying" if "H." would squall or squawk if tied up by the leg.

"Sir,—A few weeks ago I saw a letter under the above heading in your columns. The writer enquired how he could exterminate magpies. Now I do not know whether what is sauce for the jay would be sauce for the magpie too, but it might be worth trying. The way the keepers kill down the jays, which are more of a pest than the magpies in the districts I know best, is to get a young jay

and tie him up by the leg. He makes such a squalling that all the jays within hearing (and he makes himself heard a long way) come to see what is the matter, and examine the case so closely that there is no trouble in shooting them from a *cache* conveniently contrived. As I say, I never heard of this being tried with magpies, but probably a young magpie would squawk just as loudly as a jay, and the magpies have their full share of corvine curiosity, so that they would probably come to see what the matter was just as readily as the jays. At least it could do no harm trying, and as the nesting season is just at hand there is an excellent opportunity of making the experiment. Should your correspondent try it, it would be interesting to hear whether it met with success.—H."

THE LOKEWAY.

O turn aside into the Lokeway after a tiring walk along the dusty main road is like entering into the shady recesses of the woodlands. The Lokeway is only a few feet wide, and looking down it from the highway one seems to be peering into a green-walled tunnel, carpeted by fallen leaves and withered grass. The spreading branches of the bordering oaks meet overhead, and at times a tendril of ivy may be seen uniting the boughs of different trees, so that one might well believe that if the wind did not blow for a few weeks the ivy would get a firm hold and soon enfold them. Between the oaks are dark-leaved holly trees and blackthorn bushes, the foliage and flowers of which grow above the entangled brambles that often form fragile arches over the "holl" by the side of the footpath. The hedges have been untended for many years, and the "holl" is in places almost choked up with dead wood and matted masses of decayed vegetation. The bright green leaves of the arums are conspicuous on the hedge-banks, where the star-like blossoms of the lesser celandine are bleaching from yellow to white, and the dark-blue and grey-blue eyes of the speedwell peep out from among the cleavers. The quickset fences are full of birds, which flutter among the twigs and ruffle their feathers as they free themselves from their thorny coverts to fly across the adjoining fields. Some of them have settled on the footpath, and find it difficult to escape from the neighbourhood of an intruder, for the Lokeway is so overgrown and encompassed by bush growths that they cannot easily force themselves through them into the open air beyond the hedges. They fly from side to side of the leafy tunnel, poising, now and again for a moment, lightly on a bending briar, until they reach a gap in the fence where a gate opens into a field, and there they make a dash for and gain freedom.

In the spring, when the winds are still keen in spite of the tempering heat of the sun, the temperature of the Lokeway is different to that of the main road. So sheltered is it by high hedges that little more than a breeze is felt by the footpasser.

even when the over-arching boughs are swaying through the violence of a storm. Sometimes there is an indraught of air from the entrance of the lane, and the dead leaves are disturbed from the hollows between the tree roots; but in spring, autumn, and winter the air is warmer here than it is on the other side of the fences. Indeed, on certain days it seems to derive a kind of humidity from the dew on the grass and the sap in the stems of the wild flowers. In the summer the lane is ever a pleasant retreat, whether from the scorching rays of the sun or the drenching effect of a sudden rain squall. So dense is the leafage overhead that in places the sunlight is unable to penetrate it, while where it does get through it falls on the grass and footpath amid a flickering fretwork of shadows. When it rains, the drops patter on the oak and holly leaves as on a roof, and, unless the storm lasts very long, one is safely sheltered from it nearly anywhere in the Lokeway. Loiterers in the lane might almost imagine themselves in the heart of the woodlands, except when they come to an occasional gap in the hedge, and obtain a view of the cornfields or a purple carpet of clover. At such places it is possible to perceive that the Lokeway occupies a slight hollow in the midst of the tilled lands, and there are indications that it was once the site of an old watercourse which has disappeared with the advent of better drainage of the fields. Such an origin of the Lokeway would account for its unusual luxuriance of vegetation amid the comparative barrenness of the surrounding district. Now the "holl" by the side of the path is often dry in summer, and in winter it is seldom full enough to float from its bed the fallen branches which are decaying there. Thrushes nest beneath the hedge parsley, farther down its banks than would be safe in many of the field ditches, and insects which cannot live in water are to be found swarming under the rotting leaves.

Half-way down the Lokeway is a small pond, partially "grown up" with sedges and fringed with reeds. White blossoms of the water crowfoot float on its surface like snowflakes which have fallen on the green weed and amid the feather-like leaves of the milfoil. The banks of the pond are honeycombed by the water rats, whose tracks on the bordering grass are as clearly defined as those of rabbits about a warren. A patch of lily leaves forms a floating platform which bears the weight of the reed birds and wagtails, and is resorted to by the natterjacks which rest their heads upon its edges while they respond to each other's vibrative trilling. Most of the birds which haunt the Lokeway come to drink at this secluded pool, and anyone who approaches it silently may hear them chirping and fluttering about its banks. In open spaces amid the floating weed whirligigs dart about in mazy circles, and water beetles can be seen chasing the water spiders among the submerged stalks. Occasionally a heron flies from the distant marshes to feast upon the frogs which frequent the pond, and

for days after its visit, signs of its merciless slaughtering are visible on the little ledges of sun-baked mud which project near the roots of the sallows. A strong odour of mint almost renders imperceptible the rank exhalations of decaying sedge and water weeds, so that it is pleasant to lie on the bank of the pool and watch the movements of its bird and insect life. If you remain silent and guard against making any sudden stir you may do this for hours together. You may follow the ferocious warring of the water beetles and the slow crawling of the caddis-worms as they drag their curious cases over the muddy bed of the pond. A lady-bird creeping up a dark green rush stem moves so slowly that it is possible to count the black spots on its red wings, and to notice that when it opens the latter a little its back shows like a narrow black wedge between them. As it ascends the rush it looks like a ruddy gem in a setting of olive green.

Few people pass through the Lokeway, for it leads from the main road to the lowland pastures and there are several "drift-ways" more convenient for driving down the cattle. Those who make use of the quiet lane are mostly herdsmen, for whom it is a "short cut" to the meadows, from which they return with their cows by other routes. Some of them do not care about traversing the Lokeway at night, for it is one of the darkest places in the district, and has the reputation of being an uncanny quarter to venture into alone. The birds which sleep in the hedgerows have a way of making sudden and startling movements if disturbed, and when the moonlight filters through the oak branches the latter seem to assume strange and un natural shapes. At such times the livid lumps of fungi which cling close to the uncovered tree roots look like bloodless flesh, and the trailing briars catch in one's clothes and administer "tugs" such as might well be made by human hands. About the pond, the rustling of the rats is heard above the chafing of the sedges and the sighing of the wind through the reeds, and the frogs keep up a continual croaking chorus. Sometimes, however, a pair of sedge-warblers will desert the distant river-side and build their nest among the sedges, and by their sweet songs, sung all through a late spring or summer night, seem to remonstrate with timid mortals for their nervous fears. It is during the daytime, however, that the Lokeway should be visited, for then it can be seen at its best, and there are few more pleasant spots in the neighbourhood. It is a place in which trees and bushes can be heard as well as seen growing, for often it is possible to hear the bursting of their swollen buds. Along the main road the hedgerows and turf borders are dingy with dust stirred up by the wind and the hoofs of the waggoners' teams. In the Lokeway the leaves are of the freshest green, the air is sweet, and the birds sing their merriest songs.

W. A. Dutt.

MUSCICAPA ATRICAPILLA—II.

IN the following summer, 1898, these birds returned to the nest-box of the garden. The morning of April 25 broke peerlessly. As I walked before breakfast on the river-walk I heard an eager *spick, spick*, from a bird flying across the stream to our river oak. It was a pied fly-catcher, newly arrived. He broke into song immediately, then passed on to the scarlet oak where the nest-box was hung.

Only two days previously had this been replaced, lest the titmice—who had other boxes at their service—might appropriate it before its rightful owner appeared. It had been cleared out and emptied of the nest-stuff, perhaps needlessly; but it was done because it had had an autumn and even a winter tenant. On being opened one November day a beautiful, bright-eyed, long-tailed field mouse was found ensconced within, surrounded by the refuse of holly berries, which it had carried up ten smooth feet of tree trunk in order to relish snugly there. After that the box was laid under a garden seat, where it seems to have been again appropriated; for the light mass of nest-stuff was found in spring to have been reconstructed, and a little domed cell formed of it—no doubt for the winter comfort of the same mouse, or of its less elegant relation, the short-tailed field mouse or vole, which also frequents the garden.

But now the rightful owner was back, and in a high state of excitement. He hung to the box, entered it and stayed in a while; then came out to chase a great tit from the oak tree, and to mount guard despotically over his treasured homestead. He remained about and sang till past noon, using a far more extended range of notes than last year. His plumage had improved too; the dark parts of it were blacker, the spot on the forehead more defined, the breast whiter, and without last year's fleck upon it. For he was, it was presumed from his knowledge of the place and his straight return to the box, the same bird as last year, only one year the older and wiser, and more beautiful.

However, our eager little bird had now to wait for his mate; and some cold and stormy days following, he came and went, sometimes absent for a half or whole day, sometimes singing incessantly round. On the 30th of the month such a gale from the S.E. sprang up with rain, that the tender, unopened flowers of the sycamore were ripped off and flung down along with the shell-like bracts, and the glory of the white wild cherry trees suddenly departed. Yet, when the rain abated at dusk, our bird returned to his tree, and sat singing till a stronger blast sent him off again. For now his mate was due, and it behoved him to be vigilant at his post.

Next morning, in spite of the gale, she had arrived! Both birds were found hawking after flies from the palings below the tree. The cock was delighted and enamoured; he sang,

led the little brown hen warbling to the box, and when at last she consented to follow him within, came out; while she remained in a while as if she were pondering what was needed to make the place habitable. She was often in too next day, not building, but entering on his eager invitation. When she was absent he remained about, calling or singing impatiently, or when present, he attended her and awaited her exit, either hanging to the box with spread tail pressed in (revealing the white edge of the feathers) or on a twig close by. It was pretty to see her pause at the entrance, with alert head, ready to shoot out.

But there were other happy mated birds about, that sometimes came into collision with this pair. These two had been accustomed in the previous year to use the river oak a great deal, both for feeding and for retirement from their own tree, which was more exposed to the road. But within the last week or ten days a gorgeous cock redstart had first been heard to sing hard by this oak, and then been seen to visit a nest-box placed against its trunk; and now he had brought his timid, shadow-like hen to view it, and she had even begun to carry in bits of furnishing. So when our happy pair of pied birds resorted heedlessly to its branches, there flashed out upon them from some unseen perch a fiery creature of flame-like feathers, charging them, and even when the little hen proved mildly obstinate, chasing her well.

They in their turn were intolerant of perchers in their tree. The cock attacked a starling, that naturally, being many times his size, stood its ground. Robin, titmice, and spotted flycatchers were alike hustled, as well as a browny bird of their own species, possibly a nestling of last year. And later, when the hen had built and rarely left the tree, she had much trouble with sparrows, that came to gobble the tender leaf-buds of the scarlet oak just then unfolding. Though they too were obstinate, she never rested while they stayed.

But this was later, and in her anxious, settled stage. At present she was coy and inconsequent; would go off to feed by herself, leaving him to follow, and when he led her to the box would even remain perversely outside. He grew more than eager, even desperate, while she grew more reluctant. With garden birds all busy building—great titmouse, redstart, and even another pair of pied flycatchers settling in a distant box—why should his hen delay? So desperate was he on the 6th that he was caught actually carrying a straw up to the box himself. However, he did not get it in, but dropped it at the entrance! It was but a feint to encourage her; and it succeeded, for directly after she carried something up herself. Next day she went seriously to work; yet so reluctant and so nervous in building did she seem, that I wondered if she were a young, inexperienced hen? Or, if last year's hen, did she resent the old nest-stuff being removed? since this species frequently uses its old nest with

a few additions; and truly the labour of building is great. Still her motions seemed like those of a timid young bird. Carrying up a leaf fragment she dropped it at the opening, then caught it agilely on the wing before it reached the ground, and finally placed it triumphantly within the box. (It may be mentioned that the entrance hole was made small to exclude sparrows, and that the cock often pecked around it as if trying to enlarge it.) Again, when she had carried up bits of tiny bents she hung to the box too nervous to enter; and when she did enter she was even too nervous to stay there, and actually hurried out with them again! However, she conquered her fears or qualms, and re-entering finally laid them in place. And her mate would often precede her with encouraging strains.

After she had well settled to her labours, both birds were less seen, but then again, by the 19th, when the box was full of stuff and a hollow for the eggs formed, she was so anxious that she was often about guarding it.

By the time she was ready to lay, the hen redstart was sitting on six lovely blue eggs laid in a small, feather-lined bowl of her nest, which was made largely of green moss and fine bents. We often looked in at this, but we never disturbed the pied flycatcher, whose nest was at a safer and more inconvenient height, and so we never saw her eggs. She remained constantly watchful, and her mate generally absent until the 25th, when she sat for a short spell; and shortly after this he began to feed her, both off the nest and within it.

Twice their domestic peace was broken by a strangely prying cock bird of their own species. Once the two of them resented his presence by fluffing their feathers out; and again, when he actually peeped within the box at the sitting hen, the cock showed his anger in the same odd way, silently distending his plumage till he was barely recognisable. The hen sat longer and longer, and would come out at 7 p.m. to shake and preen herself.

Then after the egg breaking, came the feeding of the young birds, long sustained. While nestling redstarts flew on June 16, and great tits on June 21, our little pied flycatchers did not fly till the 24th, when they could be heard chirping loud and helplessly in the upper boughs of two oak trees, whither they had been led.

They returned again this year (1899). The spring was late and cold, and migrants were late too. Yet on April 23, I encountered a fine cock pied flycatcher in the garden just alighting in silence in the yew tree. After a short rest there he sped up the course of the river with the air of a traveller. And not till the evening of the 29th did I see the bird—or a fellow—again in the garden. However, next day, which was fine though still cold, the cock was installed in the scarlet oak and remained in possession of it and the box. It was a new box, and he picked at the hole of it as if to enlarge it.

The season not only was cold and backward but there was

much excitement and friction among the garden birds. The boxes of the migrants had been hung rather too early and the great and the blue titmice were often in and out of the pied flycatcher's box before he settled down. Then there were double cock birds around of each species that had nested in boxes the previous year. This naturally produced trouble, while the great titmice were in particular very tiresome and prying and had a turn at everyone's box as well as their own. Even after the redstarts had begun to build, and had chased these prying neighbours off, they would lurk round and in the owner's absence mischievously creep within the box and stay in awhile. However, eventually each one got his rights and his own nest-box. The pied flycatcher settling on the 30th, had to wait till May 7, singing at last loud and long, before a hen came to him. He sang not only loud but well, with intervening notes in the typical drop, making a pretty descending ripple of sound. When he had secured the hen he became too eager and impatient to sing much, and he fed her in the most engaging manner, on the top of the box, or fluttering, while she was perched on a dahlia-stick. She was already building on the 9th, though not fast enough for him, who showed the liveliest impatience.

He would come last thing in the evening and sing some very superior and sweet strains, in the manner of a serenade, close to the box. On the 21st one faint blue-green egg lay in the hollow of the nest, this time formed in the centre of the space and lined with the minutest of bents. On the 24th there were four in it, and ultimately two more were laid. It was June 24, in the late afternoon, when the young birds flew, and they were led off as usual to a more secluded spot.

While they were still fed in the nest the parents were photographed by a friend. And this year a neighbour putting up similar boxes had two broods of pied flycatchers successfully hatched in them.

MARY L. ARMITT.

A NORFOLK RECTORY.

"MIND, you must come and stay with us as soon as we are a bit settled," said one who is very dear to me, as he was leading his bride to the carriage an hour or two after the knot was tied. S. and I are united by many ties. Like me, he is a cricketer, and a more powerful bat than I in my palmiest days, now long since passed, a dark blue veteran though I chance to be. He was captain of his college boat, and added to this is his innate fondness for country objects and pursuits, a sportsman to the very core; we think and act together. We are brother clerics too.

From his Rectory the ground slopes gently down for about 200 yards to one of the best trout streams in the eastern counties.

Between the stream and the house there is an old duck decoy, which some day may again be brought into use, though this would involve considerable cost. The iron work over the four pipes is still in place and the remains of the netting too. At this time of the year the pool itself is nearly dry, the sluices that admit the water from the stream being out of repair and the channels silted up. The side, too, towards the Rectory is exposed, and a screen eight feet high and seventy yards long would have to be made.

Beyond the stream and half a mile distant are the beautiful ruins of a grand monastery that have often been described by the pens of antiquaries. And again beyond, on the hill above the ruins, stands a noble church, in the adjoining village, which was restored at considerable cost about twenty years ago. A little further on one sees more ruins, remains of the fort that once guarded the monastery below, with large ramparts, inside which most of the village now lies. This church and the ruins are hidden from my friend's rectory by a clump of trees which will be cut down and turned into firewood this winter. The other side of the rectory are several sycamores remarkable alike for their beauty and their size; while close by is a cover which forms part of the glebe, and is full of game of different kinds, for every inch of the country round is carefully preserved. At one end of the lawn there is a dry pit some fourteen feet deep in which bushes, nettles and the like are allowed their own sweet way. Here a gadwall reared her young last spring, and a pair of turtle doves are now nesting.

It was in this charming spot that I found myself one afternoon the middle of July, the guest of S. and his delightful and accomplished spouse. I had barely swallowed a hasty meal when I was invited to try my hand at the trout. "No thanks, not just yet; I really cannot wade in these clothes and my portmanteau will not be here for an hour or two with proper 'tog.'" Indeed, I was only too glad of an excuse to see the performance of a master in the gentle art, and so prevailed upon him to catch a fish for dinner. As we neared the stream I noticed a quantity of large water docks, whose ancestors may once have fed the larvæ of the large copper butterfly, now alas extinct. Then from the side of the stream there rose two green sandpipers, so easily recognised by their white tails and noisy cry. This pair must have nested there, as they were often to be seen close by, or on some fallen tree trunk in the decoy itself. The stream, at no time a large one, besides being shallow was low and very clear. The weeds, too, in that part had just been cut, so any fish on the feed could be seen at once. I have been on several streams in my life, but never have I seen a grander show or better class of trout. It was a case of looking at pounders till one tired and picked out something half as heavy again. Indeed, in one small bend of the river, a little deeper than the rest, I should say I saw forty fish averaging 1 lb. a piece. Almost

directly a good fish was discovered on the feed. In went S. up to his knees, a safe distance below, crouching close to the side and taking care in moving not to send a wave upstream and disturb the water. He was, however, at the first try doomed to failure, for a little fish must needs start close to him and rush upstream, crying "*cave*" as it went, and putting everything on the alert for the next twenty yards or more. A second fish was soon stalked and a fly sent floating down almost above his very nose. This was done twice or thrice without a sign. "I must try another pattern, for he will not look at this," was the only remark. A second fly accordingly was tried and offered as before, but was treated with the same contempt. Just then down came a natural fly on the water, which S. caught in his hand. "Now I see what they are rising at." One like it was produced from the fly book and tied on, and at the first cast fell lightly on the water, six inches above the fish. The result was instantaneous. "I am into him at last! be quick, get below him with the net." There was a struggle, a splash, and a rush or two, and then I landed him. It was a fair case of outwitting, on the principle of fine and far with a dry fly cast upstream. He weighed 1¼ lb. We had him for dinner that night; he was as pink as a salmon, and wasn't he good?

But before dinner we had an hour to spare, and I was asked to go and kill a rabbit or two to beguile the time. This I refused. I did not know the ground, the paper had just come, and I was deep in the debate in Parliament upon the Tithe Rating Act, which to many a poor parson will make the difference between dry bread and bread-and-butter. So S. took his gun and went off by himself. There were five shots in quick succession, and in twenty minutes he was back with four rabbits and a hare, just by way of "keeping down the butcher's bill."

Next day we agreed to go a mile and a half down stream and fish up, and I was duly overhauled to see if I would do. My boots were pronounced too good (I wish they were), as they would not let out the water fast enough when wading. So a really holey pair were found, but since they hurt my toes a pen-knife was freely used. This cured the ill at once. They certainly let the water out, but they also let the gravel in, as I found to my cost when walking home. Epilobium and other water plants, nearly eight feet high, lined the banks to the water's edge. There were many trees on either side with branches overhead; and, as the weeds just here had not been cut, it was an awkward stretch to fish, and I got into many difficulties. Not so my companion: it was all the same to him, and, as there was a good rise on, the sport was fast and furious. The fish, however, often broke away by taking refuge in the tangled mass of weed, and we were forced to be very rough with them to try and keep them on the top of the water. At times we had to throw down our rods, and following the line with our hands, grapple a hooked fish, weeds and all, sometimes with

success, sometimes to find the gut would not stand the strain. We took home six fish, weighing 5 lbs. in all, putting back the smaller ones to grow and fight another day.

Next day being very hot we applied ourselves under the shade of the trees to quite a different task. Among other treasures S. had been given a quantity of British birds' eggs collected by an uncle and great-uncle of his wife. They were packed in all sorts of boxes, and these he had kept untouched to show me, just as they had come to him. This collection was by anticipation a good one from the known repute of the sportsmen who had made it, each of whom had been an M.F.H. But I was not prepared for what I saw. About one in five was named with the time and place of capture; and, though we had Seebohm's grand work to guide us, we named none, for we thought that the unnamed majority were well worthy of being submitted to experts who had handled more eggs than we. At a rough guess there must have been at least a thousand, which we put in a cabinet. In the top drawer were fifty-four eggs, amongst which I found the following named and the rest unnamed:—great bustard, wild goose, osprey, crested grebe, kite, moor buzzard, horned owl, barn owl, avocet, cormorant, little bittern, golden plover, curlew (never laid), stork, shoveller, long-eared owl. Strange to say, these eggs of the great bustard were taken years ago in the very village of which S. is now incumbent.

From the rest of the collection I will mention a few more named sorts, taking them at random:—fieldfare, redwing, siskin, golden eagle, white-tailed eagle, golden oriole, stormy petrel, Baillon's crake, Richard's pipit, shore lark.

One would think the whole of the British Isles must have been laid under contribution years ago to produce the eggs of birds like these.

By way of varying our sport we obtained permission to fish in a lake three miles off which is well stocked with trout, some of great size. Close to this lake is the most stately mansion I have ever entered, which contains one of the finest private collections of pictures in England. These our hostess kindly showed us when lunch was done. The sight was almost bewildering in the short time at our disposal. Treasures of art met us at every turn, gorgeous 16th century Venetian chairs from the Doges' palace among the rest. But this is not the place to enter into a description of such things, and, indeed, I must own to being unequal to the task. On going to the lake we saw a black swan which had been raised in an incubator, and followed its mistress like a dog, and, beyond a hiss, objected little to our presence. The lake is about ninety acres in extent; but though we saw some large fish, not one could we take, try how we would. Indeed, not a rise was to be seen that afternoon. Several gadwall were flying about, apparently the commonest duck in these parts. They must be very local, for I have not heard of their occurrence at my own home thirty miles off, where

the common mallard often breeds The trout in the lake are reputed to have a peculiar and unpleasant taste, owing, they say, to the prevalence of some weed. When, however, they are placed in the spring at the head of the lake for a fortnight they become palatable and good. Not meeting with sport in the open water we tried our luck in the stream which runs parallel to, and about twenty yards from the bank. Here also the fish were on the sulk. We caught but one, and that of good size. It was, however, dark coloured and out of condition. On looking for the cause we discovered a wound nearly healed in the back, where the fish had been stabbed by a heron. Across the grass there was a well-worn path made by otters from the stream to the lake. The ground was too dry to show their foot marks, but I found their "wedge," which when once known can easily be recognised. Otters there are plentiful, and they live in peace.

As we could catch no trout we revenged ourselves on the shoals of dace in the lake by standing on the bank and presenting our flies to the largest fish, which we pulled out as fast as we liked, until I cried "'Tis simple butchery." "Not a bit of it," was the only reply I could get, "they are a lot of swine, and eat the food of nobler fish."

I am glad to say that this young Norfolk rector has become on good terms with the keepers, and among other things has induced them to spare the owls: as a consequence these birds are frequently to be seen round his house.

Our evenings were spent in various ways: sometimes the violin was taken out of its case and a delicious hour or two passed, the husband accompanying his wife upon the piano, one of their many wedding presents It was bliss to see and hear them.

Some persons employ their ingenuity and pen in discussing the question "Is life worth living?" In this sweet home, at all events, there can be but one answer.

EDMUND THOS. DAUBENY.

July, 1899.

HOW SCENERY IS MADE.

VII.—THE ACTION OF ICE AND ITS EFFECTS.

TO understand what ice can do and has done, one ought to go to the Arctic regions, the Alps and North Wales. Photographs of Greenland show us a great sheet of ice to be lying all over that island or continent, whichever it be, sending gigantic glaciers down the gorge-like fiords into the sea. As soon as they float out far enough to break off, the terminal portions sail away as icebergs. Besides these,

enormous "fields" of ice occur over the sea around the Arctic coasts.

If we next go to Switzerland, we find the tops of the mountains to be covered with ice. This has been formed in the same way as in Greenland, viz., from snow consolidated into ice by pressure. As it falls on inclined surfaces, its own weight causes it to slide down the rocks, lubricated by the water below formed by the melting on the surface. This, however, is not enough, for the glaciers in time come down to almost horizontal plains, as in the Valley of the Rhone, and they still move on as before. The causes of this glacier-motion have much perplexed physicists, for it is found that they move faster by day than at night, faster in summer than in winter, and faster at the top than at the bottom. But what causes these movements? Many theories have been propounded; but they have been offered on observing ice *on a small scale*. The interpretation is simple enough when the phenomena of ice are studied over large areas. It is simply due to changes of temperature, of course assisted by gravity as long as there is any inclination at all. Thus, on the great lakes of North America, the ice behaves precisely like most things, viz., it *expands* under a rise of temperature and *contracts* under a fall: the sheet of ice on the lakes actually rises several inches above its original level on warm days; and contracts so as to form cracks when the temperature is lowered. This alternate expansion and contraction of the whole glacier, modified in detail as stated above, cause it to move along the line of least resistance, *i.e.*, downwards and onwards.

Frost causes large and small masses of rock to split off the sides of the ravines; they then fall on to the surface of the glacier and form two long mounds of rock—pebbles and dirt, constituting the so-called "moraines." These are carried down and finally, it may be after many years of progression, are deposited at the bottom in front of the glacier, forming enormous heaps of rubble. Sharp stones falling between the glacier and the rocky sides get "set" in the ice, and as they move along they scratch and score the surface of the rocks. At the same time the rocks below get ground down and smoothed over.

We have no longer any such glacier-action in Great Britain; but we had formerly. Snowdon and the Scotch mountains, like Mount Blanc to-day, furnished an abundant supply. Grooves and scratches may be seen on all sides far down into the valleys below; while the lower slopes are composed of the "terminal moraines," upon which seaside towns, such as Penmaenmawr, are sometimes built. Large blocks of stone, scored and scratched, appear as "boulders" in the meadows near to that town; and it will be noticed by their nature that they have all come from a distance.

Besides terrestrial glacier-action, we are not wanting in the evidence of coast-ice. In East Anglia the soil consists of "glacial clays," some 100 feet or more in thickness in places; and, if the heaps of stones collected off the fields for mending

the roads be picked over, in central Suffolk, fragments of many geological strata with fossils—all rounded, scratched and water-worn—can be readily found. These must have come at least from the midlands, *i.e.*, from higher ground. At Filey, again, on the Yorkshire coast, between Scarborough and Flamborough Head, boulders of many materials may be seen scattered about as the cliffs are wasted away.

To prove the enormous extent to which glaciers "grew" in the glacial epoch, if the tourist, when at Neuchatel, will walk to the top of the hills behind the town, he will find a wood. In this are numerous blocks of granite, &c., resting on the yellow limestone of the Jura range. One, known as Pierre-à-Bot, is as big as a cottage. Now they all must have come from Switzerland, travelling on ice some 600 feet thick across the lake and valley of Geneva, till they were stranded where we now find them.

The reader will gather that as an element of scenery we must find the ice in existence, as in Greenland and Switzerland; but the effects left in Wales and Scotland are not conspicuous, unless one knows what to look for. Henceforth the tourist should make a point of looking out for the above-mentioned features, and he will soon discover them for himself; and then he will be able in imagination to picture Snowdon, Cader Idris and Ben Nevis, &c., to resemble Mount Blanc and other Swiss mountains, as bearing a continuous mass of ice all over the higher regions and thrusting out great tongues of ice down the slopes into the valleys below, and thence out to sea, sending off icebergs to float away gradually, continually dropping their burdens of rock and finally disappearing.

We have now completed our survey of the principal agents concerned in making scenery. My object has been to call attention to facts of nature and to excite an interest, if possible, in all who travel about to observe everything they can and verify all that they have elsewhere learnt.

GEORGE HENSLOW.

REVIEWS AND EXCHANGES.

Who's Who? 1900. Messrs. A. and C. Black. Price 3s. 6d. net.

WHEN a work of reference has reached its fifty-second year of issue it needs no introduction, and its longevity is its best recommendation. But in spite of its serviceable, flexible red cloth cover, *Who's Who?* may well be styled an evergreen, for, though fifty-two years old, in completeness and correctness it shows itself still vigorous and up to date. Naturalists, like other folk, may well be interested in what are virtually autobiographical notices of their fellows, whilst the preliminary lists of officials of all kinds are invaluable to everybody.

Cyclopædia of Classified Dates. By Charles E. Little. Funk and Wagnall's Company. £2 to £3 12s., according to binding.

This is a remarkable, and in many respects an unique work. With over 1,400 pages, clearly printed in triple columns, it contains about 95,000 entries, sum-

marising the history of the world from B.C. 5,000 to the end of A.D. 1894. The primary classification is by the existing countries of the world in alphabetical order. Under each country the grouping is by date, clearly printed at the head of each page, and then under the headings Army and Navy, Art, Science and Nature, Births and Deaths, Church, Letters, Society, State and Miscellaneous. There is, moreover, an index of 290 pages, containing 125,000 entries, so that any event that can be even approximately dated or located can be found with a minimum of trouble. Great care has been exercised in securing accuracy and freedom from all bias in statement, whilst there can be little doubt that no other work of the kind exists which is anything like as comprehensive. The publishers offer to supply it on the system of deferred payments now so popular.

Cyclopædia of Practical Quotations. By J. K. Hoyt. Funk and Wagnall's Company, 1899.

This is a very valuable book of reference. It contains 674 pages of English quotations, printed in double columns and arranged alphabetically under subjects, about 80 pages of Latin, and 44 of modern foreign quotations, an index of authors, and a concordance occupying 334 pages in closely printed triple columns. Flowers occupy 35 pages, arranged under the names of the species mentioned, and birds 18 pages, where, however—*horresco referens*—the bat finds a place! The quotations are sometimes too short, as, for instance, under "Nightingale," where only the first four lines of Barnfield's poem, quoted in our last issue, are given; and no quotations from the Bible are included; but these are the only faults we have to find in what is certainly a very practical book.

Thoughts in many Minds on Animal Life. Gathered by H. C. F. Women's Printing Society, 1899. Interleaved. Price 2s. in linen, 1s. stiff paper.

This is a pretty booklet of fifty pages, designed to inculcate a feeling of reverence for all animal life as in itself mysterious. We could have wished that the compiler had given more detailed references to the source of the passages quoted than the mere names of their authors.

In Birdland with Field-glass and Camera. By Oliver G. Pike. Illustrated with 83 photographs taken direct from Nature by the author. T. Fisher Unwin, 1900. Price 6s.

Though he goes so far afield as Norfolk, Mr. Pike's hunting grounds have been largely in the London district; and in this book he gives us, classified under "Woods," "Fields and Hedgerows," and "The Stream and its Banks," his impressions of many interesting species of birds, both common and rare. The photographs are mostly of nests, and though not uniformly successful, form an interesting supplement to the works of Mr. Kearton. They are printed as half-tone blocks on a highly glazed paper. Many of the anecdotes on the nesting habits of birds will be remembered by members of the North London Natural History Society, who will be glad to have this memento of a paper read before that Society by Mr. Pike.

Among the Birds in Northern Shires. By Charles Dixon. With coloured frontispiece and 40 other illustrations by Charles Whymper. Blackie and Son. 1900. Price 7s. 6d.

As Mr. Dixon truly remarks in his Preface, "The difference between the avifaunæ of the northern and southern shires is strongly marked in many respects . . . . The important effects produced by latitude and climate upon the bird-life of these widely separated areas make material for fascinating investigation . . . . Unquestionably these northern shires, from an ornithological point of view, are much more interesting than the southern." We are glad, therefore, to have this "popular introduction," as the author styles it, written by so well-known and competent an authority. Classified according to the character of their habitats, almost every species indigenous in the district is included, and a chapter is added on Mr. Dixon's favourite topic of migration, with special reference to the coasts of Lincolnshire and Yorkshire. Though some of Mr. Whymper's drawings seem to us rather hard, his name is a sufficient guarantee of the general excellence of his share in the work.

Bulletin de l'Association pour la Protection des Plantes, No. 18. Geneva, 1900.

We are very glad to receive this proof of the continued prosperity of an Association with which we have the most cordial sympathy. This number contains an article on yews and cedars, illustrated by an excellent photograph of one of the latter, and an even more interesting paper, "Les Jardins dans les Murailles," by M. Correvon, the President, with six charming studies of plants on the walls of the Association's gardens. We rejoice to learn that the example of the Swiss Society has led to the establishment in Italy, under the initiative of Signor Baccelli, Minister of Education, of a kindred body named Pro Montibus, Società per la protezione delle piante e per il rimboschimento. This Association has inaugurated an arbor day in all Italian schools, and has already two gardens, Daphnæa on Monte Baro, and Chanousia on the Little St. Bernard. As we ourselves are criticised for not alluding in our remarks in our February issue to the Association's "superbes tableaux-affiches" in all Alpine hotels, we can only express our fear that it was the unfortunate relegation of these notices to the attics, as here admitted, that caused them to escape the notice of our correspondent, the Rev. H. E. A. Bull. The subscription to the Swiss Association is only 2 francs a year, commutable by one payment of 40 francs. The Treasurer is M. E. Berlie, 61, Grand-Pré, Geneva.

Received.—*Board of Agriculture*, *Leaflet*, *No.* 63. *Destruction of Charlock; The Essex Naturalist*, vol. xi., Nos. 4-12, April—December, 1899; *The Victorian Naturalist*, for March and May, 1900; *The Naturalist*, *The Irish Naturalist*, *Science Gossip*, *Knowledge*, *Humanity*, *The Animals' Friend*, *Our Animal Friends*, *The Animal World* and *The Agricultural Economist* for May and June, 1900.

NATURAL HISTORY NOTES AND QUERIES.

Long-tailed Field Mice.—It is curious that Miss Pengelly's and her friend's cats should be so fond of long-tailed field mice, while ours will not touch them. I do not think that length of hair affects a cat's tastes. My cat is long-haired, while those in the village are mostly the reverse.

Market Weston, Norfolk. EDMUND THOS. DAUBENY.

Birds Using Old Nests.—A pair of flycatchers here are rebuilding their old nest for the fourth season. They arrived on May 6, but did not begin to look at the old nest till about the 28th, though another pair had a nest with eggs by that time. For some days the hen only did the repairs, but now they are both at work. They bring roots of grass from the edge of the lawn, and strips of bark from dead lime twigs, &c. The hen gets into the nest, puts down her bunch of material, and then scratches with her feet like a terrier. The cock is not so tame, so I cannot observe him.

Blackbirds' nests are in great demand. I cleared out an old nest which was piled up with leaves and fir needles, and a few days after a blackbird took it and laid eggs. Another blackbird's nest, which for a month had three deserted eggs, has now been taken, and there are four warm eggs with the bird sitting. What became of the old eggs? Another blackbird's nest was occupied only a week after the first family were fledged.

Botley, Hants. M. S. JENKYNS.
June 5, 1900.

Maternal Instinct in a Flycatcher.—I was walking in a wood a short time ago, the day after a very severe thunderstorm, and noticed a thorn that had evidently been struck by lightning, one branch being torn right off, and the bark ripped. As I approached the tree, a spotted flycatcher flew off her nest, which was built in a hole just below the place where the torn-off bough had joined the stem, and close to the rift in the bark. The shock the night before must have been violent, and enough, one might think, to have caused the bird to forsake her nest.

Sotterley, Wangford, Suffolk. M. E. B.
June 15, 1900.

Mimicry in Starling.—With reference to the note hereon in the May issue of NATURE NOTES, a year or two since I had a wonderful starling, wonderful, that is, as regards its imitative powers. "Nigger" could utter the plaintive call of "Cuckoo," the laugh of the green woodpecker, and the quack of a duck with excellent effect, but so soon as I introduced a jackdaw into my collection, "Nigger" was silent thereafter.

In a wild state, my observations lead me to suppose that the "song" of the starling is little varied, and I have not noticed any mimicry other than when the bird has been kept in captivity.

5, *Glenferrie Road*, W. PERCIVAL WESTELL, M.B.O.U.
St. Albans, Herts.
May 30, 1900.

House Martin.—Have the members of the Selborne Society noticed the scarcity of the house martin in the last few years, or is this scarcity confined to this district?

In the year 1897 we bred very large numbers of this favourite bird under our deep over-hanging eaves, and when young and old took their flight, preparatory to leaving us in the autumn, they appeared like a swarm of bees. The next year none came to their accustomed haunts here, not one built a nest. Last year one pair built, and bred their young. This year so far none have built, but a few pair have paid visits. I have remarked everywhere in this district that where many used to be annually seen, there are now very few. We have more swallows than usual, who build chiefly in the barn, and swifts fly up and down the valley. If the scarcity of the house martin is general, can their absence be explained? We are very careful to keep sparrows out of their nests, and I think it well to knock down their nests in the winter, leaving only their mark, not only that sparrows may not adopt them, but also because old nests are not so safe for the young as new ones. I have observed no hostility between swallows and martins, for we have had both for many years, and I cannot see any rivalry between them. I prefer martins; they fly up to their nests over our windows, and give a cheerful chirp.

Woodtown, S. Devon. W. F. COLLIER.
June 19, 1900.

Humming-Bird Hawk-Moth.—In reply to Mr. Farley allow me to say that this insect does not hibernate; but there are two broods. Several of them were to be seen last year hovering over the bean blossoms in my kitchen garden at the end of May. Late in the autumn many took refuge in odd corners in my house, and in such like places, where they died from cold and want of food. The spring brood often escapes notice from being less numerous than the autumn one. EDMUND THOS. DAUBENY.

Mysterious Emigrants.—To Messrs. Donald Currie & Co.'s steamer, "Tintagel Castle," must be granted the palm for the greatest number of refugees carried away from South Africa. Mysterious was their arrival, no less secret their departure.

Leaving Cape Town on May 8, we noticed large numbers of bees flying around the ship, and one Sunday when in latitude 13° south, 1° west, from forward arose a swarm which, settling on a ventilator, completely covered it. Never before, I think, has there been so curious a place for swarming bees as a varnished ventilator on a ship in mid-ocean.

We constructed a nondescript hive, and there content they remained for the next seven days. On the 20th we drew near to Cape Verde, passing about nine miles off, and going that morning to see our little colony, found it flown. Surely instinct must account for the bees' quiescent state during the days when land was far off, and their sudden departure as we drew near the coast.

We wonder how they will fare in the land of their adoption; will they be stronger than the natives of the bee world in those parts, or will war be waged against the intruders, and so exterminate them? Darwin accounted for the appearance of isolated members of a species totally unrepresented by others of their kind in the surrounding country in many clever and accurate ways and reasonings. How he would have welcomed this straightforward case of voluntary migration! E. H. SHACKLETON, F.R.G.S.,
3rd Officer, s.s. "Tintagel Castle," in the *Daily Mail*.

SELBORNE SOCIETY NOTICES.

Increased Subscriptions and Donations.—The Council acknowledges, with thanks, the receipt of the following:—Subscriptions: F. Crowley, Esq., 21s., R. Holt White, Esq., 20s., A. Cottam, Esq., 10s.; Donation: Miss E. B. Rawson, 18s.

Council and Committee Meetings.—The next meetings of the Council will be on Tuesdays, July 3 and 17, at 5.30, at 20, Hanover Square, W.

Election of Chairman of Committees.—At the Council Meeting held on June 19, Mr. George Avenell was elected Chairman for the ensuing year. Mr. John L. Otter was re-elected Honorary Treasurer and Mr. A. J. Western, Secretary.

Old Deer Park, Richmond.—At the same meeting Professor G. S. Boulger was elected to represent the Selborne Society on the deputation to approach Mr. Hanbury on the subject of the proposed appropriation of a part of the Old Deer Park at Richmond for building purposes.

Free Grant of "Nature Notes" to Public Schools.—The Council has decided to continue the free gift of a copy of the Society's Magazine to the libraries of the principal public schools throughout the country for another six months.

NEWS FROM THE BRANCHES.

Wellington College Science Society (Junior Branch).—Professor Boulger gave a lantern lecture on Gilbert White and the value of field work on May 19, to inaugurate this new junior branch, and, in spite of the excitement of the relief of Mafeking and a visit from Her Majesty the Queen during the afternoon, a considerable and attentive audience assembled.

SOUTH EASTERN UNION OF SCIENTIFIC SOCIETIES: ANNUAL CONGRESS AT BRIGHTON AND HOVE.

On June 9, the meeting of delegates was held under the presidency of Professor Howes, F.R.S. It appeared from the report that there was a small deficit on the annual account, and, as it was thought desirable to appoint an assistant secretary at a salary, a small committee was appointed to consider the best means of increasing the income of the Union.

It was announced that the place of meeting for 1901 was not yet decided upon, but that the selection would be made from Tonbridge, Maidstone, and Hastings.

Mr. Boulenger, F.R.S., was elected president for 1901.

Mr. Tutt proposed "That the time has now arrived when Sectional Meetings should be held at the Congress." It was the general opinion that the number attending the Congress was too small to make two adequate audiences at the same time, and some thought it very desirable that specialists should have the fullest opportunities of hearing papers read and discussed on subjects outside the scope of their own studies. The motion was negatived.

It was settled that the scientific societies of schools should be competent to join the Union on payment of a fee of 2s. 6d.

Our Hon. Treasurer, Mr. J. L. Otter, attended as delegate of the Selborne Society.

There is still unfortunately a small balance of £7 or £8 due to the Secretary of the Union, Dr. George Abbott, of Tunbridge Wells, on account of the heavy printing expenditure of the Union in 1898. As a means of removing this debt, members of the Selborne Society are reminded that by payment of 2s. 6d., which should be sent to Dr. Abbott, they can become members of the Union and receive its interesting volume for the year.

FIELD CLUB RAMBLES.

May 26.—A party of about twenty-five assembled at Byfleet Station and strolled, under the guidance of Dr. H. Willson, along the bank of the Basingstoke Canal and through Mr. Locke King's fir woods to Dr. Lionel Beale's beautiful garden at Caenswood, Weybridge, where they were kindly provided with tea. Professor Boulger gave a short lecture on the flora of Japan, which was well represented in Dr. Beale's garden.

June 9.—Favoured by most delightful weather, a party of seventeen, guided by Mr. Mühlberg, went across the old Racecourse of Bromley, along Roundabout Wood, and through Petts Wood to Chislehurst—hardly fifteen miles from London, and yet a whole afternoon of meadows and woods and fields only. The party enjoyed specially the song of the numerous birds in the woods, including two nightingales, and the botanists were more than satisfied. Tea was taken at the Crown Inn, Chislehurst Common, and some of the party went on to Bickley.

On June 16 a well attended ramble took place in the neighbourhood of Purley and Coulsdon Common. The guide was Mr. E. A. Martin, F.G.S.

Fine weather favoured those who assembled at Southfleet Station on June 23 for a ramble through the orchards and woods of Kent. Leaving the station, Southfleet Church was first visited, with its curious old monuments, brasses and frescoes of Ridley and Latimer. Then a walk was taken, *viâ* Westwood, to the quaint old-world village of Green Street Green. After tea at the village inn it was intended to visit the Roman villa at Farningham, but a ramble back to Southfleet, through the village of Lane End and the beautiful Darenth Woods, was substituted. Wild flowers were found in rich profusion, especially in the neighbourhood of Green Street Green. The guide was Mr. A. B. Wilkinson. The walk was about eight miles in length, and the return journey was made by the 9 express from Southfleet.

FORTHCOMING FIELD RAMBLES.

July 7.—St. George's Hill, Weybridge. Waterloo (main line), 2.29, Weybridge, 3.7. Return tickets, 2s. 10d.; single, 1s. 7d. Dr. H. Willson will be the guide to a ramble through the woods and commons on or near St. George's Hill. Tea at Weybridge, 5.45. Afterwards walk by river or visit the famous Grotto in Oatlands Park.

July 14.—Ramble through Epping Forest. Train leaves Liverpool Street, 2.41. Meet at Theydon Bois Station. Guide, Mr. L. B. Hall.

July 21.—Holwood Park and Keston Common. Train leaves Charing Cross, 1.45; Cannon Street, 2.20; London Bridge (S.E.R.), 2.23. Meet at Hayes 3.12. Croydon members take 2.32 train to Elmers End and change for Hayes. Book return to Hayes. Guide, Mr. George Clinch, F.G.S.

July 28.—Broxbourne. Meet in Booking Office (East side Suburban), Liverpool Street Station, at 2 p.m., and book to Broxbourne. Cheap return fare, 1s. 9d. Take the 2.15 express, which reaches Broxbourne at 2.45. Tea at "Woodman," Wormley, about 5.30. Return trains, 6.43, 7.30, 8.54. Guide, Mr. C. Nicholson.

August 4.—No ramble.

ANSWERS TO CORRESPONDENTS.

W. Percival Westell.—The particulars you give are far too few to identify a bramble, which few botanists would care in any case to do without specimens.

Rev. F. M. Millard.—The white variety of *Vicia sepium* is uncommon.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S. As he will be out of town during August, they should, from July 25 to August 31, be sent to "care of MESSRS. JOHN BALE, SONS & DANIELSSON, Great Titchfield Street, W." Letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 128. AUGUST, 1900. Vol. XI.

SELBORNIANA.

Richmond Old Deer Park.—It is much to be regretted that there should be a division of opinion among naturalists as to the proposed laboratory in the Old Deer Park. Those who investigate Nature by experiment under artificially limited conditions do not need to be assured that those who prefer to examine her ways under the untrammelled conditions of wild life are in no wise inimical to other methods of research. At the same time we are convinced that there are many sites procurable within a short distance from London which would not be so menacing to what is wild and beautiful as that proposed. We hope members of the Selborne Society will bring all the pressure in their power upon the Government to secure the abandonment of the present scheme.

The Thames Preservation League.—Mr. R. Percy Stephenson has been appointed secretary to this useful body, whose headquarters are at 1, Great College Street, and is anxious to be brought into communication with all who are interested in the Thames. The League is keeping a vigilant eye upon various matters of vital importance to the river-haunting public, such as the extension of buildings along the river-front at Reading and the public access to the towing-paths and ferries.

Wanted an Interpreter.—The Maurice Hostel Field Club, a recently-established organisation, mainly of working men, under the presidency of Canon Scott Holland, have at the outset of their career experienced a great loss in the departure from London of their "guide, philosopher and friend," Mr. Harry Lowerison, and in their First Annual Report they say :—

"We take this opportunity of saying how very grateful we shall be if any lady or gentleman will volunteer to help us in this way by joining us on our Saturday rambles once a fortnight and showing us the wonderful secrets of Nature, and helping us to appreciate the artistic beauty of creation which we can only dimly comprehend, because of the lack of an interpreter."

The secretary is Mr. J. Gordon Collins, 121, St. John's Road, Hoxton, N.

Pigeon Shooting.—We have frequently had occasion to remark on the gratifying fact that almost the entire London press is cordially with us in the advocacy of Selbornian principles. This happily is a matter wholly independent of any questions of party politics. We rejoice, therefore, to see a new candidate for popular favour, the *Daily Express*, joining the chorus on the side of humanity in the following, headed "Brutal 'Sport:'"—

Some remarkable statements have been made to the *Express* as to the hideous cruelties and barefaced frauds said to be carried on in connection with the "sport" of pigeon shooting. We believe in hearing all sides, and hope that these charges may be utterly disproved. Perhaps the quickest way of getting this done is to print them, leaving the followers of the sport to deny or—sit down under them. Among the allegations are the following:—

(1) That wild pigeons—the common blue rock—are shot at (contrary, perhaps, to the Wild Birds Protection Act).

(2) That special birds are cooped up for days in shallow baskets without water and food, this inhuman treatment making the pigeons too weak to rise quickly from the trap and escape the gun.

(3) That betting men bribe the trapper to put weak and starved birds in the traps when the man they want to win is shooting, and to put strong and healthy birds in the traps for the other competitors.

(4) That, in addition to this fraudulent practice, the trapper twists the "bob" tail feathers of the healthy birds, and pushes them back through the socket into the flesh, causing excruciating pain, which makes the bird—to use the language of our informant—"get up sharp."

(5) That occasionally the trapper resorts to the cruel practice of breaking the bird's legs between his finger and thumb when his gang of sharpers are backing the gun, thus causing it to flutter slowly from the trap.

These are a series of most grave statements, and do not rest on the unsupported allegations of one man.

In regard to the breaking of the bird's legs, one man who makes his living by catching birds which escape from the Gun Club, Notting Hill, said to an *Express* representative: "Am I sure, guv'nor!—am I sure that I've caught hundreds of birds in my time with both legs broken, and not a shot in the body or a feather touched? Of course, they break them when it

suits them. I'm not against fair sport, but my opinion is that if the outside public knew half of what goes on over there—pointing with his thumb towards the Gun Club—"there'd be a bit of a rumpus."

And there will be, if the truth is half as horrible as we are told.

Lark-Hawking.—In the course of an article on the revival of falconry *The Morning Leader* for July 10 contains the following:—

"Lark-hawking with merlins—the form of 'falconry' likely to be the most largely indulged in by the women who are adopting the new sport—is very good 'fun' upon the whole, and as the merlin is comparatively easy to train he is likely to be more in demand than either the peregrine or the sparrow-hawk—the latter at all times an unsatisfactory bird to have much to do with in the field. But hawking is surely one of those 'blood' sports with which women at least should never associate themselves; and the lark of all birds should be sheltered from the action of the Englishman's instinct to 'go out and kill something.'"

Selling Eggs in Close Time.—Our attention has been called to a paragraph in *The Daily Mail* for June 21 as to the withdrawal from an auction at Messrs. Stevens's Room, of forty-three lots of eggs of cuckoo, nightingale, bearded tit, chough, siskin, &c., catalogued as "all this season's take," and a correspondent suggests that the Selborne Society should take action in the matter by obtaining, through the auctioneer, the name of the law-breaking miscreants who took the eggs. We would point out, however, that the Society was never intended to be a prosecuting society like the R.S.P.C.A., and has no funds for such a purpose. If the Wild Birds Protection Acts are to be a reality, surely this is one of the cases upon which the police should act on their own initiative.

American Legislation for the Protection of Birds.—We have received from the United States Department of Agriculture their Bulletin, No. 12, of the Division of Biological Survey, *Legislation for the Protection of Birds other than Game Birds*, by Dr. J. S. Palmer, published on May 1. This is a most valuable compendium of all the laws on the subject in the various States of North America, for Canada is included, illustrated by figures of six leading species. About 1,125 species and sub-species of birds, we are told, inhabit North America north of Mexico. From the legislative standpoint they may be roughly divided into three groups: (1) insectivorous or song birds, such as thrushes, to be protected at all times; (2) game birds, about 200, *i.e.*, 18 per cent of the whole, which may be killed at certain seasons for food or sport, such as quail; and (3) injurious birds, such as the English sparrow, which are excluded from protection. The American Ornithologists' Union

propose restricting the term "game birds" to the *Anatidæ*, *Rallidæ*, *Limicolæ* and *Gallinæ*, other species commonly hunted in the United States requiring protection. The report deals with many topics of the greatest interest, such as the tardily adopted measures for the prevention of the extermination of "plume birds" in Florida and Texas, permits for scientific collecting, laws as to cage birds, and the laws in Connecticut, Minnesota and Wisconsin as to Bird and Arbor Days. Of these latter the following Act of 1899 in Connecticut is the most drastic:—"The governor shall annually in the spring designate, by official proclamation, an arbor and bird day, to be observed in the schools."

BIRDS OF AN ENGLISH GROUSE MOOR.

IF the grouse moors of England are fewer and less extensive than those of Scotland, they yet have their own charm; and to remember one such moor in Western England is to remember innumerable delights—the beauty of what Wordsworth has so happily called a wide "sky-prospect"—the beauty of distant hills and near stretches of heather, and, not the least joy, the many birds strange to lowland eyes, which, with the grouse, make their home among these wild uplands.

The lane that leads to this moor lacks in August much which made it beautiful in May—lacks the brilliant blue of the speedwell, the pink of the wild geranium, the vivid yellow of broom blossoms, the masses of sweet white birdcherry in the hedges, and all the inexpressible joyfulness of spring gauds. But even August has its flowers, and perhaps no flower could make such a gorgeous effect as do the red berries of the August rowan tree, clustering thickly among the yet brilliant green of the fern-like leaves, when seen against the cloudless blue of an August sky.

Before reaching the gate which opens on the unenclosed moor, the lane dips down to the bed of a little river, fed by mountain streams, and owing much of its wild beauty to the nearness of the mountain. The stream is low now, for the summer has been a dry one, and the great boulders in the shallow water, where the minnows play, look white, almost dazzling, in the fierce sunlight. If we are quiet we may chance to see a water ousel sitting on a slab of stone, as it does in Bewick's inimitable vignette, and curtseying ceaselessly with a drooping movement of its wings. Birds who haunt running water are the most restless of a restless race. We must not press the theory too far when we remember the immovable heron, but ousels, wagtails, sandpipers—in all of these there is an inability to be still, which they must learn from the water on whose banks they live. We do not see kingfishers here; the

stream is too rapid. But there are sandmartins' nests in the steep bank, sandpipers are flitting low over the green meadow above it, wagtails are stepping daintily among the rough pebbles by the water's edge; and there is more lingering in the pleasant chequered sunshine by the bridge to watch them. But the prettiest sight of all is to be seen in winter, when flocks of little siskins are feeding along the line of dark alders (dark even in their summer green, darker still in winter) which fringe the stream. Unlike the redpolls who feed and chatter, siskins are silent birds, and we are at first unaware of their presence until some too near approach makes them rise in a flock, twittering softly, but only to settle down again in silence as before.

And now, leaving the stream and the shady lane, we see high against the August blue—a spacious line against a spacious sky—the moorland hill. But how the surface of this stretch of wildness varies! Stunted thorn-bushes with white stems, lichen-stained gorse of the diminutive mountain variety; then a forest of bilberries, or rarer whortleberry of Mount Ida; and on the table-land at the summit of the hills we may walk for miles over heather—the growth of long years—by patches of dark bog, where grow strange and beautiful bog plants among rushes, dry now and brown, among rough moorland grass which the sheep have not trimmed.

The edges and fringes of this mountain are the home of many a bird which, although attracted by the near mountain, will yet not live upon it. Between it and the outlying wild hills lies a valley, Alpine in its greenness and with a belt of larches stretching across it, which adds to the Alpine feeling of the view. In the dingle running down the valley live the black grouse, a link with an older England, and one which should be cherished lest it too go the way of bittern and of bustard. It is evening now, and the birds will be up on the hill-top feeding among the heather, and if we follow them there we come to the summer home of two other birds—the lapwing and the curlew. The lapwing is one of the most attractive of winged things, attractive both in appearance and from its wild, sad cry, the beauty of which we should, perhaps, appreciate more if it were less common than it happily is. And soon, warned by the lapwing's ceaseless *peeweet, peeweet*, the curlews rise to wing, springing up like Clan Alpine's warriors from the heath. Seen near at hand, curlews are large white and grey birds, with only a faint tinge of brown, but against the sky they show as brown only, and their sickle-like beaks give them a strange, weird look, unfamiliar to English eyes.

When we begin to climb the real mountain, the first bird to greet us will be the pretty blue-grey wheatear with its black wings. It is tame and fearless when we approach it in its mountain fastnesses, but for all its fearlessness it carries its love of the wilderness to such extremes that man and his works are abhorrent to it; and, although almost cosmopolitan in its

range, yet, as has been said, where the spade comes the wheat-ear vanishes. And from the dingles which run down the hill-side we should hear, if it were spring, the loud and yet sweet song of the ring-ousel with the golden bill and the white crescent on its breast; but it is August, and the harsh blackbird-like call-note takes the place of the song. But perhaps the most frequent bird on the mountain is the cheerful little meadow pipit. It seems to rejoice as much in the still heat of a summer afternoon, when the hot air dances above the heather, as in the fierceness of a winter storm, which it braves with a joyousness all its own.

No merlin has ever gladdened the eyes of the writer or saddened the heart of the keeper on this moor, but once a happy wight found one of their nests under the heather. But the sweet plaintive notes of the golden plover may be heard here from April to October on the wilder mountain tops, where there is no lack of the moisture which they love; and they, with the red grouse—that exclusive glory of the British bird list—may fitly close our recollections of the birds of this English grouse moor.

As we come down the mountain lane in the summer sunlight we are reminded that even August is not destitute of bird music. For a solitary wren is singing its bright little lyric from the deep, rocky hedge-bank, and a robin's pensive warble, so redolent of chill November damps, come to us from the hazel tree which is making a grateful shade across the green lane.

C. Trollope.

IN A DEVONSHIRE LANE.*

I TURN from the hot and dusty high road into a cool and shady lane. The red banks rise high on either side, clothed as only Devonshire can clothe them. Matted ivy clings close to them, its dark leaves contrasting with the vivid green of the moss. Those delicious, damp, yielding cushions of moss are mysterious forests through which countless little beings wend their way. I like to draw aside the fronds, making a narrow track through them, and then to stay quiet and watch all the odd travellers that cross this path. Funny little snails pass, feeling their way knowingly with their houses wobbling on their backs; spiders making good use of their eight legs and looking so important; ants, rushing out into the open, stop surprised and look all round, hastily nodding

* The writer of this paper is still in her teens. She possesses the double faculty of observing keenly and of describing vividly what she observes. She is a daughter of Mrs. Francis Blundell, who, as "M. E. Francis," has published *A Daughter of the Soil*, *In a North Country Village*, *The Duenna of a Genius*, and many other pure and pleasant novels, the latest being *Yeoman Fleetwood*.

their heads to each other. Some lose courage and turn back, others make a dart forward and plunge into the friendly thicket on the opposite side of this dangerous road: earwigs, burdened with big white eggs, hurry across looking neither to the right nor to the left: then a ladybird appears, calmly swinging herself from one miniature bough to another. These are all wonderful little beings, full of life and energy, and each clever in its own way.

It is May, and every plant and tree is bursting forth in green. Long wild-rose briars with tender red thorns swing across my path, ropes of woodbine holding them in a tight embrace, and brambles unfold their rough new leaves beside the scarlet hangers-on of last year, whose weather-beaten faces are carven with the strange designs of insect sculptors. Stout old ashes, their gnarled roots covered with moss, their twisted limbs clothed in lichen, thrust long, clean-skinned, snake-like shoots upward to the light, their sticky heads fringed with the olive-fibred flower.

The crooked, knotted trunks of these ashes invite many small plants and animals to make their homes in the numerous cosy cells and corners they provide. Here in a sunny nook a purple orchis stands against the bark, proudly unfolding its handsome spotted leaves. Out from between these leaves a bud is pushing its way, tight little white balls showing where the fantastic heads will nod. The whole is sheathed in a robe of pale green silk, folded round it in such a manner that, as the bud grows up, the delicate case divides from its spiral point downwards, thus gradually letting in light and air to the baby, until the latter is fully matured, when it stands up and throws off its covering, and the pretty leaves fall back on either side, and wither away, for their duty is done.

Small ferns uncurl all over these friendly ash trees, and here and there a primrose or a violet has taken root. These grow, too, about the banks, the white star-faced satin flower scrambling past them, and the hairy-leafed, rosy-stalked cranesbill towering above them. Under their leaves the field vole sits and sings; his squeaky voice exactly resembles that of the cricket, to which insect most people imagine it belongs. This little mouse likes to be heard and not seen, but, if I stand quite still with my eyes on the spot from whence the music proceeds, I sometimes see him glide, a tiny dusky shadow, through the grasses. It is useless to part the foliage and look for him—he objects to intrusion, and melts away in a most unaccountable manner.

On the crest of the bank young straight-backed oaks stand up to the sun, and spread their baby leaves all gold against the blue. Elms are there, too, their lower branches fully clad in green, their upper ones just bursting bud. At their feet the bluebells swing, and the ragged-robin nods, and the bracken stiffly unfolds. The red earth, though pierced, drilled, threaded through and through with the roots of trees and plants, one half of which I have not mentioned, still affords kindly shelter to the

wild folk, clad in fur, feather and scale. Grey rabbits spring through the thorns, to whisk down dark holes, leaving me wishing I was small enough to follow. Then, as I walk on slowly, stopping every instant to look at a fresh wonder, a robin suddenly darts out in my face and discloses her nest—such an exquisite nest, hollowed out deep in the warm moss and so carefully lined with hair. I should have thought the moss would have been softer for the baby birds myself, but of course I am no authority to pass an opinion on such matters, and doubtless Mother Robin knew what she was about and had a good reason. Poor little thing, she is in such an agony of fear for the safety of those four mottled eggs. I pass on and leave her in peace—may that nest be preserved from schoolboys' eyes!

Further on I meet a willow warbler; she is only just thinking about building her nursery, and is greatly excited, consequently most bold, not to say impertinent. You may object there are no willows in the lane. No matter! The willow-warbler is there. Where is she not? This particular member of her kind, I say, is just thinking about building her nursery, having travelled all the way from Africa for that purpose. She has found a feather, an ordinary downy feather from a hen's breast, but she is very proud of it. Her elation is most amusing. She evidently desires her mate to congratulate her upon her discovery, for she darts into his solitary hiding place at least a dozen times to display it to him. He is tranquilly singing for his own benefit and that of any one who chooses to listen, and probably does not wish to be disturbed upon household matters, for his wife seems to find him unsympathetic. Alighting upon a branch over my head she exhibits her treasure to me for want of someone better. Leaning down upon her perch she gaily twirls the feather and chirps in her throat. "Isn't it pretty?" her bright eyes seem to say, "but you don't know where I'm going to put it." As a matter of fact I do know, quite well, because she cannot resist flying backwards and forwards over the chosen site, although, thinking herself very cunning, she will not go in until I am lost to view.

My lane winds up a hill and, turning a sharp corner, I suddenly come upon a pool by the wayside. A little rill trickling down the steep slope feeds it, and its superfluous water creeps through a tunnel in the bank to lose itself in a field of young corn. This is a most interesting pool. A big stone guards its mouth, over which the united raindrops, trying to look like a stream, tumble, gaily splashing in the basin their efforts have formed. They bubble indignantly when I bar their passage with my hand, but quickly, running on either side of the obstacle, continue their journey. Where they first reach the hard shining stone aforementioned, they have hollowed out for themselves a resting-place, and two deep grooves mark the remainder of their way. After all, they have reason to be proud.

Moss, bearing liquid diamonds, overhangs the pool, clinging

to sod and stone, catching at odd sticks and roots that may come in its way. A mass of it, leaning carelessly down from the bank, suddenly begins to heave, the raindrops loose their hold and vanish, a hideous, narrow head is thrust out of the green, and a snake glides noiselessly into the pool. Why do I turn cold when I know that he is harmless? He looks up, and his uncanny eyes glitter. He is afraid of me, yet his long body causes not a ripple in the water as he twists himself back to his hiding-place, and I pass on, glancing over my shoulder. A downy baby bird hops into my path, and, unable to balance itself, flutters helplessly before me in its endeavours to escape. A thrush shrieking fiercely in the hawthorn owns her wandering little one. I place it in the leafy branches where the wide-eyed mother flies to it with a palpitating heart. Her cries follow me, and in an instant she is again over my head, unnaturally tame in her distress. Another speckled truant calls her from the wayside, and she knows not which way to turn in her anxiety. I walk on quickly to put her out of pain.

Next I meet a slow-worm comfortably curled up in the dust, sunning himself. He is very like a snake, but knowing him to be a lizard I do not object to him while he lies still; when he begins to writhe away from me I cannot help feeling as though he were exploring the back of my neck. His cousin, the true lizard, is very different. I see one creeping through some dry grass, and, quickly placing a hand in front of him and another behind, easily catch him. His small paws banish all repugnance—for me at least. It is the leglessness of snakes and slow-worms that I do not like. I believe the last-mentioned reptile boasts a fine collection of the limbs in question in an undeveloped state under his copper armour; but as he does not use them the effect produced is the same. This lizard looks distractedly over the side of my hand trying to make up his mind to drop to the ground—it must seem a long way to him. A brother makes his appearance, speedily to vanish again. The banks are alive with these scaly folk, and everywhere drilled with their holes, down one of which warm habitations my little captive joyfully wriggles upon being liberated.

I am now high up. The banks are much lower, and silver-barked beeches, with shining leaves and powdery bunches of pale yellow flowers, replace the tall elms. Again the tinkling of water attracts my attention. Parting a tangle of briars, I behold under the bank a miniature grotto of polished grey stones forming an uneven basin into which from the top of the bank narrow jets of rain-water patter busily. They have worn the rugged stone smooth, they have made the channel down the bank, they feed the hard-working streamlet I have mentioned, and upon them depend the lives of countless creatures, each one loved by God. I must trace this important rill to its source. Above me on a level with the bank is a clover field. Every day the wind comes over the hill-top, and, sweeping down the slope,

shakes each blade and leaf and flower in that field, and each one lets fall a drop of water. These drops are crowded together, and pushing their way through the forest of stems make grooves for themselves which are gradually deepened as the drops in front are pressed on by their constantly reinforced brethren behind. The grooves run into one another, growing larger as they descend the hill. Increasing in size, they diminish in number until, turned aside at the lower end of the field, several furrows discharge their water to unite in one little stream. And this little stream finds its way to the brink of the red clay precipice down the channel in the side of the bank into the bramble-screened basin. Raindrops can do much, and much depends upon them.

I am nearly at the top of the hill when my lane ends abruptly and I come to a standstill under the shadow of the wood that clothes its summit. Behind me larches whisper and pine-trees sigh: over my head a gull sails quietly, rocking on his wide white wings: on either side meadows, with golden buttercups and blushing daisies trembling in the grass, stretch down to the valley where sheep-bells ring under the orchard bloom. In front of me, though far below, the blue plain of the sea sweeps away to blend with a misty horizon. Yes, it is blue only when it washes the feet of the frowning cliffs: they throw their shadows upon it; and, when the clouds pause in their lazy passage to look down at their reflections, the sea rolls purple beneath their gaze. To my right and to my left hills scramble away to meet the sky, some bare and brown, except where a patch of gorse or a sheen of bluebells light them up: some, where the incline is less steep, have lent themselves to man, and their sides present vivid contrasts in colour—young corn against the dull green of the pasture field, red earth newly ploughed beside a clover meadow. One hill rises high over its brethren, and its brow is darkened with the shadow of a cloud. It is a great wide-spreading cloud: it comes on swiftly, and all the hill grows black beneath it, while the trees behind me shake ominously, and the birds are silent. Suddenly, as though torn by an invisible hand, a jagged rent opens in the lowering skies, and the sun looks through. Only for an instant, but in that instant he shows me a perfect picture—an orchard all dappled pink and white, the light filtering through grey trunks to touch the ruddy-coated kine—a little white house. The peep-hole is closed, and the sun's face is hidden as the ragged lips meet: the cloud rushes on while the birds pipe merrily. It sweeps across a violet sea and melts from my sight, leaving all the earth bathed in light. But would I could have painted that fleeting picture of prosperity standing in Nature's frame! God created everything with a loving hand. Look up to the great hills, look down to the little flowers, look away to the wide, wide sea; look! the world is beautiful.

MADGE BLUNDELL.

REVIEWS AND EXCHANGES.

Nature in Downland. By W. H. Hudson. Longmans. Price 10s. 6d. net.

"THOUGH I have now travelled the Sussex Downs upwards of thirty years, yet I still investigate that chain of majestic mountains with fresh admiration year by year, and I think I see new beauties each time I traverse it." So wrote Gilbert White, and the present writer could say the same and is not, therefore, surprised that a new comer such as Mr. Hudson, well known for his keen appreciation of the beauties of wild nature, should be fired with the same enthusiasm and determine to write a book. Often have we, more humble in intent, resolved to make a tour of these same downs from end to end, and assuredly there is yet much more to be said, especially from the archæological

RICHARD JEFFERIES'S COTTAGE AT GORING, SUSSEX.

standpoint, which is obviously foreign to the title of Mr. Hudson's work. A better interpreter of the natural charm of the downs than Mr. Hudson could hardly be. If Richard Jefferies had continued to inhabit in the flesh that cottage at Goring, from which Mr. Hudson writes his opening chapter, we might well have had a picture of more studied minuteness of detail; for we are inclined at times to feel a little dissatisfied with Mr. Hudson on this question of detail. Thinking of a picture of Goodwood, by Mr. Alfred Parsons, in his earlier manner, we turn up the reference "Flora of the Downs," in the index to the present work and find it sketched in the fashionable impressionist style rather than with informing detail. In short, Mr. Hudson writes as the charmed visitor and not, as he did when dealing with the Argentine, as the enamoured resident. As a broad treatment, however, of a most attractive theme, his work is well-nigh inimitable; nor could his pen have found a happier accompanyist than the pencil of Mr. McCormick. The most serious fault, indeed, which we have to find with

The South Downs from Ditchling Hill.

THE NORTH ESCARPMENT OF THE SOUTH DOWNS.

a well written, well illustrated, well printed and well bound book is that, except in some advertisements, there is no indication of the artist's name, save the initials, known only to a few. We have for some years admired the thoroughness of Mr. McCormick's work; and if occasionally, as in the frontispiece and in "Oxen Ploughing," his atmosphere is too reminiscent of his Indian drawings or those in "The Tragedy of the Korosko," never, so far as we know, has the very spirit of the Sussex Downs been more deftly transferred to paper than in the two illustrations which we are able, by the courtesy of Messrs. Longman, to reproduce here, in addition to that of Jefferies's cottage.

Sweet Hampstead and its Associations. By Mrs. Caroline A. White. Elliot Stock. Price 15s. nett, to subscribers.

In a great city, though many old buildings may survive rich in associations of interest in connection with personalities of the past, the great mass of shops and houses must necessarily be so entirely uninteresting that the others are but oases easily overlooked. A suburb, once remote and always somewhat secluded, thanks to a steep hill and a loose sandy soil, Hampstead, on the other hand, still combines many rural charms with associations of literary characters of former days attaching almost to its every house. Many books have been written on this most beautiful

JOHN EVELYN.

of the Northern Heights of London, and when a resident nearly 90 years of age takes up her pen to add to their number, we are less surprised at the interest which such a scheme could not fail to evoke, than at the mental energy displayed in the undertaking. Hampstead has memories of many naturalists more closely connected with the place than was John Evelyn; but we are glad to avail ourselves of an opportunity of printing a portrait of that pre-Whitean Selbornian; and, though many of its most picturesque bits are now old houses, a probably pre-historic tumulus, and that haunt of interesting aquatic plants, the Leg of Mutton Pond, testify to attractions other than the merely biographical. Mrs. White's gossipy narrative cannot fail to prove as seductive to the lover of Hampstead as are the illustrations she has got together; but we should have liked a chapter of bibliography, if not a map as well, and it is to be regretted that the services of some naturalist were not secured to revise the accounts of the geology and flora of the Heath. The pasque-flower certainly does not grow on Hamp-

OLD COTTAGES, NORTH END, HAMPSTEAD.

TUMULUS AT HAMPSTEAD.

Leg-of-Mutton Pond, Hampstead Heath.

stead Heath, nor does *Veronica spicata*, whilst *Bella, Salex, Hippurus* and *Gallium* do not improve the appearance of an account for the compilation of which there are abundant materials. We are indebted to Mr. Elliot Stock for permission to reproduce the accompanying illustrations.

Country Matters in Short. By William Frederick Collier. Duckworth & Co. 1899. Price 3s. 6d. nett.

The fact that this dainty little volume of essays, by an occasional correspondent of NATURE NOTES, is made up of reprints from the *Saturday Review*, is perhaps guarantee of its literary quality; but, writing in weather well nigh tropical, we may well add a few words to point out that the essays are really short, sometimes almost provokingly so, whilst the book as a whole is rejoicefully light for these days of heavy paper. Dogs, hunting and South Devon are Mr. Collier's main topics, and we have taken up his papers so often to while away a pleasant five minutes that we feel quite sorry that we cannot agree with his thesis that Shakespeare anticipated the discovery of sex in plants. We once knew a most able botanist who in the unconscious humility of true greatness, remarked of another of vastly inferior attainments, "You never know what X. knows until you mention something and find that he has been thinking of it all the time." We have long suspected that Sir Thomas Millington's reputation as to the recognition of sex in the vegetable world was based on similar modesty on the part of Grew.

Field-path Rambles round Maidstone. By Walker Miles. R. E. Taylor & Son. Price 6d.

Mr. Walker Miles, in this little book, illustrated by six pretty views on the Medway from photographs by Mr. A. Bedding and describing twelve excellent walks in his well-known minuteness of detail, has laid us under fresh obligations. Though maps may be had to accompany these handbooks, the directions given quite obviate the use of any maps, as we have repeatedly proved by personal trial. Would it not be possible, without adding seriously to the bulk of these booklets, to give in the briefest form some indication of the points of interest *en route*, the date or historic association of old buildings, the whereabouts of interesting plants, &c.

The Derbyshire Naturalist's Quarterly, being the Official Magazine of the Blackwell and district Scientific and Literary Society, the Bakewell and district Naturalists' Field Club, the Matlock Field Club. Edited by Rev. Claude Hinscliff, Blackwell, vol. i., No. 1. May 19, 1900. Price 6d.

This is a step in the right direction and a good step too. A Derbyshire Quarterly may well succeed where the *Midland Naturalist* failed; for, after all, county feeling is a potent force. The contents are varied, solidly written and well got up. We must, however, protest against the wholesale use, contrary to all custom, of capital initial letters to specific names.

North American Fauna, No. 17: Revision of American Voles of the genus Microtus. By Vernon Bailey, U.S. Department of Agriculture. Division of Biological Survey. June 6, 1900, pp. 88, with 5 plates and 17 figures in text.

This seems a very thorough-going little monograph on a genus including seventy species and sub-species of North American voles, arranged under nine sub-genera. Between 5,000 and 6,000 specimens have been examined, so that the author has certainly compressed his results into an absolute *précis* of information.

Mineralogy. By Frank Rutley, F.G.S. Twelfth edition, revised and corrected Thomas Murby. Price 2s.

The fact that this manual of an abstruse and not very popular branch of science has reached its twelfth edition, is sufficient recommendation in itself.

Received.—*The Victorian Naturalist* for June; *The Naturalist; Irish Naturalist; Knowledge; Science Gossip; Humanity; The Animals' Friend; Our Animal Friends*, and *Agricultural Economist* for July.

NATURAL HISTORY NOTES AND QUERIES.

The Squirrel.—Mr. Rooper in NATURE NOTES for June speaks of the squirrel eating birds' eggs. That it does so occasionally is unquestionable, but I am satisfied by a long experience with squirrels, both tamed and wild, that they will only eat eggs when in a state approaching starvation. I have continually offered eggs to them of different species (having had five species in cages at one time), and when purposely kept moderately hungry they refused to eat the eggs, raw or cooked, even when broken for them. Squirrels abound all around my house, but except in one case, in which starlings attempted to drive them out of a box I had put up for the squirrels, and were defeated, I have never seen a conflict between a biped and a quadruped. I have wild squirrels living in bird's nest-boxes under the eaves of my house, but being always fed they do no damage to anything, and though they often get into the cages of my nesting doves they never attempt to disturb the nests. Some of the little creatures which find the way to the nests exposed on my window benches are in such a miserable state from want of food that they can hardly climb, but I have never found a tree or a plant injured by them: my firs and larches, as well as deciduous trees, are absolutely untouched.

Deepdene, Frimley Green, Surrey. W. C. STILLMAN.

Crow Counting.—The inquiry in NATURE NOTES as to the capacity of the crow to count must be answered in the affirmative. I have no close acquaintance with the European crow, but when a boy I had a great fancy for crow-quills for drawing, and I tried in vain to approach the American crow with a gun in my hands to within gun-shot range, though if I carried only a stick they were contemptuously indifferent to me. Therefore on several occasions I induced two of my boy friends to go with me into a copse on the border of the feeding ground of the crows, and when the two companions left the cover and walked out of sight the crows came down fearlessly within range.

They had another singular faculty which I have not observed in the European crow. They used to gather in immense numbers in the pine woods near my father's house in the winter afternoons and carry on a disorderly cawing for half a hour, more or less, and then disperse in every direction, gathering again at nightfall in some particular pine wood of the region, never two successive days in the same locality, but occasionally in the same wood where the council had been held. We used to say that they had been debating about their roosting-place for the night. As we lived on the border line where the cultivated valley of the Mohawk marched with an immense pine forest, and the crows fed in the former and slept and nested in the latter, we had abundant opportunity to study their habits. I have seen the long lines of the crows from various directions converging at sunset on the chosen roosting-place in aggregated number of thousands, and have been able to listen to the deafening din of their council cawing too often to be mistaken.

Deepdene, Frimley Green, Surrey. July 3. W. C. STILLMAN.

Magpie Counting.—The correspondent who had not heard of George le Roy nor his story of the counting-test being applied to magpies, will find it given on p. 178 of J. G. Wood's "Boys' Own Book of Natural History."

Fylton Rectory, Bristol. A. C. MACKIE.

Mimicry in Wild Starlings.—With reference to Mr. Percival Westell's note on mimicry in starlings in July NATURE NOTES, he says he has not noticed any mimicry "other than when the bird has been kept in captivity." Mr. Westell may be interested to hear that I have often heard wild starlings about the house mimic curlews—this was in Northumberland. In Shropshire, in 1896, I heard one mimicking the call of the partridge. On this occasion Mr. Meade-Waldo, whose name is well known to ornithologists, was with me, and pointed out the starling to me.

The Gables, Wirksworth, July 4, 1900. C. E. MEADE-WALDO.

On page 138 Mr. Westell refers to this subject. In addition to the usual song of the starlings—if such we may call it—I have frequently noticed starlings imitating other birds and sounds. One here so nearly imitates the wryneck as to deceive me occasionally until I listen for its other notes. I have also noticed starlings imitate hens cackling, and also house-sparrows. Locality also gives variety in the voices of starlings; in South Warwickshire I consider their notes or song more musical than in this district. Starlings usually have two broods in my boxes in the season in the same nests, but so far this season I have not noticed second broods in any case. J. HIAM.

Cuckoos and the Weather.—It is most unusual for the cuckoo to remain here so late in the season. Only once do I remember them staying so late, and that was in the cold summer of 1879, and then I heard one on July 13. It is generally understood that they become hoarse in July, but never did they sing more clearly or more continuously than now (July 5). There were three chasing one another here about 4 a.m., uttering their familiar cuck- cuck- cuck-coos. I counted the repetitions of one a few days ago, when he gave me his name 142 times without a break. I have not met with a cuckoo's egg or a young bird this season so far. JAMES HIAM.
Astwood Bank, Redditch.

Summer Migrants.—Perhaps some readers may like to compare notes on the arrivals of the summer migrants in other localities. The following is my list and dates:—April 16, ring ouzel; 17, chiff-chaff; 18, titlark and wryneck; 19, willow-wren and swallow; 22, nightingale, cuckoo, blackcap, and sandmartins; 23, housemartins, whitethroat, redstart, and lesser whitethroat; 28, yellow wagtail; 29, garden warbler. May 2, wood-wren and whinchat; 3, swifts; 4, grasshopper lark; 5, sedge warbler; 7, spotted flycatcher; 15, corn bunting; 24, red-backed shrike. June 6, turtle-dove. JAMES HIAM.
Astwood Bank, Worcestershire.

House Martins, Swallows, &c.—On page 138 Mr. W. F. Collier asks for information on the above subject. Here, I take much interest in these birds, and my observations are that the martins are about the usual quantity, about twenty-five nests occupied by martins and a few hy sparrows. I have on the house eighteen nests in a row within a space of about ten feet. Instead of knocking down the martins' nests annually, I fix foundations, such as a nail or two, or a piece of an old file sharpened at the end and cut off about one and a-half inches long and driven into the brickwork at the proper distance to build on, under the eaves; this gives a foothold much appreciated and readily built on. Swallows are not as plentiful as they used to be, I have only one pair instead of four or five some years ago. Sparrows are brutes to the poor martins, and I have to shoot some to give the martins a chance; nevertheless I have some eight or nine pairs about, with nests in boxes, tins, &c., placed in trees and under the eaves of buildings. On the whole, I have not had so many nests as usual this season in boxes, tins, and other contrivances. One pair of robins reared two broods in tomato tins, while another pair did not feel inclined to accept my hospitality and lost their first brood, probably from rats, and in the second attempt only reared one young bird. In other houses I have had tree-sparrows, fly-catchers, marsh-tits, four pairs of starlings, and about the usual quantity of stock-doves, but the magpies, I believe, have been very destructive to the latter, and they also destroyed a partridge's nest with eighteen eggs which was most annoying, but as friends wanted young magpies for pets, I allowed them to rear three so as to accommodate them. JAMES HIAM.
The Wren's Nest, Astwood Bank, Redditch.

Queen Wasps.—Queen wasps have heen unusually plentiful this spring, so that later on when the workers come out (as a few have done already) we may expect a plague in September. J. HIAM.

Blackthorn.—A correspondent sends us an interesting object washed ashore at Slapton on the coast of South Devon and preserved by the cottagers under the very obvious name of Blackthorn, as a preservative against fire! It is a small, much-branched, smooth, polished, dark brown or black, horny sclerobasis of a

coral, resembling to our unskilled eyes *Leiopathes glaberrima* of the Madeira coast; but the authority at the British Museum to whom we submitted it had either insufficient knowledge or insufficient courtesy to determine it for us.—ED. *N.N.*

SELBORNE SOCIETY NOTICES.

Library.—The Council acknowledges with thanks the receipt of O. G. Pike's *In Birdland with Field-glass and Camera*, and C. Dixon's *Among the Birds of Northern Shires*, for the Library, from the Editor.

Council Meetings will be held at 20, Hanover Square, W., at 5.30 p.m., on Tuesdays, August 7 and 21.

FIELD CLUB RAMBLES.

July 7.—The party, numbering fourteen, were received at Weybridge Station by Miss Ward, in the unavoidable absence of Dr. Willson; and after an enjoyable ramble through the beautiful woods on St. George's Hills, were kindly entertained at tea by Miss Ward. They then visited the remarkable Grotto in Oatlands Park under the guidance of Miss Ede and finished the evening, at his request, in Dr. Lionel Beale's garden, whence they returned laden with flowers.

July 14.—Under the guidance of Mr. L. B. Hall, the party walked from Theydon Bois to High Beach and Chingford, traversing some of the most beautiful parts of Epping Forest. The most interesting plant observed was, perhaps, the tutsan (*Hypericum Androsæmon*, *L.*).

FORTHCOMING FIELD RAMBLES.

Saturday, *August* 4.—No ramble.

Saturday, *August* 11.—**Uxbridge to Denham** by the River Colne and banks of canal. Meet at Uxbridge Station at 3.36 p.m., on arrival of 2.53 p.m. train from Paddington. Train calls at Ealing 3.7. Return fare 2s. 2d. Tea at the Swan Inn, Denham. Guide, Mrs. Percy Myles.

Saturday, *August* 18. — Visit **Whitgift Hospital, Croydon** (Elizabethan), now threatened with demolition, and see interesting old furniture and documents. Thence by banks of Wandle to Beddington and Carshalton, where take tea. Opportunities here for studying pond-life. See Anne Boleyn's Well, the Lakes and Ruskin's Pool. Return from Carshalton Station. Book single to West Croydon. London Bridge, 2.55: Victoria, 2.53. Conductors, Dr. J. C. Hobson and Mr. E. A. Martin.

Saturday, *August* 25.—Ramble round Oxshott and Claygate. Train leaves Waterloo 2.20 (Main Line Station). Take cheap return tickets to Claygate, 1s. 5d. Guide, Mr. A. B. Wilkinson.

Saturday, *September* 1.—**Epping Upper Forest and Ambresbury Banks Ancient Camp.**—Train leaves Liverpool Street 2.41 p.m. Meet at Theydon Bois Station. Return tickets available from Chingford. Guide, Mr. L. B. Hall.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S. As he will be out of town during August, they should, from July 25 to August 31, be sent to "care of MESSRS. JOHN BALE, SONS & DANIELSSON, Great Titchfield Street, W." Letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 129. SEPTEMBER, 1900. Vol. XI.

SELBORNIANA.

The Financial Position of the Society.—The Treasurer reports that—with a very small amount of cash in hand—the Society was, at the end of July, still nearly £40 in debt to its printer on the 1899 account; that a large number of subscriptions for this year are still unpaid; and that there is, in fact, nothing in hand from the receipts of this year to meet the expenditure belonging to the same period. It is obvious, therefore, that, if we are to continue in 1900 to pay off debt as we did in 1899, it must be by the receipt of subscriptions which are now in arrear and of donations. It is needless to point out how the whole work of the Society is crippled by this unsatisfactory state of its finances.

The Birds' Paradise at Kew.—We read with pleasure an able article in the *Daily Mail*, of August 7, on Kew Gardens as a Birds' Paradise. The writer states that about fifty species habitually breed there, and refers appreciatively to the value to the naturalist of the fifty acres of ground surrounding the Queen's Cottage, a piece of old-established woodland. We were, however, sorry not to see in the article a word of protest against the ruin of this sanctuary which is threatened by the scheme for a physical laboratory recently brought forward.

Audi alteram partem.—The Rev. E. T. Daubeny writes:—"Little did I think when 'A Norfolk Rectory' was published that I should get into hot water. There appears to be a certain class of literature that objects to one's shooting a rabbit or catching a fish. At all events it has been so in my case. I

have been pelted with pamphlets, adversely quoted, called many names, and slapped all over. But I am still alive, and have not even taken to my bed. And the reason is this, my faith in these publications is but little, for the contributors do not always know what they write about. Not long ago the editor of such a periodical about animals asked me to write an article on birds for him. To this I assented, if he would give me a contribution to rehang the bells in my church. In answer he said he could not give a donation, but suggested that my cause might be advanced by bringing into the article something about the '*Rooks that lived in the belfry ! ! !*' To this I replied 'Rooks in a belfry ! ! Do send me one and I will have it framed and glazed.' If those who edit matter connected with the creatures round us do not know the difference between rooks and jackdaws, what can their opinions be worth? I have been a sportsman in a mild way all my life, and have not yet got over my boyish liking for a rabbit pie, while a broiled trout is a rare treat. I shall continue to shoot the one and catch the other as opportunity serves. I will, however, discontinue so to do if those who object will try and meet me. There are numberless interesting creatures in a drop of water which I have every reason to believe thoroughly enjoy their innocent and, no doubt, useful existence. Will my objectors give up tea drinking and using hot water? For every time they heat water they condemn millions of creatures to be boiled to death. But as they like their tea and prefer hot to cold water on a frosty morning, they do not scruple to take life in a wholesale manner. Where do they draw the line between boiled rabbit and boiled bacillus?"

NATURE IN AUTUMN.

DURING spring and summer Nature has been too earnest about her work, in spite of blossoms and green leaves, to devote herself entirely to please us with colours; but now the shoot has hardened, the bark looks strained at the seams, the blossom has produced seed, the corn been gathered into peaked ricks, the hive stored with honey, and the floors of our barns are strewn with apples and pears. There is nothing left for Nature but to enrapture us by conjuring a spectacle from the disused material which cumbers her workshop, while mists attend, like curtains, lest the picture should be too glaring. Eden must have sighed for autumnal tints, and the serpent did good, as well as evil, when he transferred Eve's blushes to the foliage.

Here is an oak throttled with ivy. Afar sounds the hum of insect-wings. We find bees taking the last honey of the season,

and wasps their funeral banquet from the yellow clusters. This creeper produces globes of ripe and black berries in the following spring.

In another fortnight the squirrel's winter store-house is full of hazels and beechnuts, and the snake is coiled asleep in the bank. As we walk along the tinted hedge, a touching silence prevails in absence of the insect brood; for there no longer hums the bee, the grasshopper chirps not, and the brigand wasp lies in an unhonoured grave. But the eye does not find all strange. Here is the cuckoopint once more. It first appeared as a herald of spring, summer changed its whitish-green flower into a cluster of green berries resembling an ear of Indian maize, and now autumn enlists it as one of her heralds, turning its berries red. Although by the river-side the stately reeds are "broken by the wind," the remains of lilies rot beneath the water, and the dragon-fly has long lain a dim and lifeless shard, giving birth to no further dazzling "wonder," even here the iris leaves rows of brilliant berries seen through the bursting pod. Autumn's uniform is like the British soldier's. Witness the red and crimson of the Virginian creeper, briar, and thorn leaves. Witness the red bullet- and slug-shaped hips, the mountain-ash clusters and the glossy clusters of the wild guelder-rose. There are also black clusters of shot-like elderberries, also black sloes suffused with purple bloom, and black cornelberries. Spindle-berries are pink, or rather, a fleshy pink pod dividing, shows small round orange berries.

Here is a tuft of moss variegated with red, yellow and green, attached to a branch of the dog-rose. Little maggots, cradled in cavities in the swollen wood, cause the wondrous growth. Here again is a branch which summer garlanded with green bryony. The branch has now lost its leaves, and autumn turns the wreath into a necklace of red coral beads.

This season produces many kinds of fruit, not usually garnered; golden crabs which Atalanta might have picked up, splendidly polished; dusky-grained horse-chestnuts, set in pulpy caskets with prickly exteriors, and indigestible eating chestnuts packed in bristly nest-like cases. Fir-spires, like sombre priests holding out their arms to bless the wood, are decked with fragrant yellow cones. Observe Nature's skill in cupping the acorn and winging the thistle-seed. Let us admire those trees and flowers which, when luxuriant foresee a bleaker season and leave tokens which cheer us then!

But the herbage looks more dreary than arboreal growths; the bracken shakes dry and auburn in the wind, the poppy and campion are changed into pepper-boxes, the pink cone-shaped teasel stands grey and sapless, but the willow herb wears a champion's feathers.

The fungus tribe also displays its unhallowed and unsound glories. The mushroom is snowy above, pink beneath, fragrant, but often baneful. There are small toadstools tinted green and

crimson. One stands up like an umbrella, flaked with snow and soot, and makes a landmark for field mice. Here puff-balls cluster in a fairy ring of luxuriant grass. These, when mature, are bags which squirt brown dust from a central aperture at a touch of the foot. From an unsound trunk juts a fungus like a great freckled, yellow tongue.

However, Nature soon wearies of the splendid spectacle. Mother earth demands something of the trees in return for nourishment at her patient breast. Then beech, chestnut, elm, sycamore, oak and lime shower down their gold as the wind, that subtle tax-collector, rustles through their branches. By and by the earth will demand a silver tribute of the dark-hued clouds, though at present the sad stubble is slightly silvered in the sun only by the work of spiders, which seem at this time to be busy with the spinning-jenny.

Though the other birds are hushed, the rooks seem more cheerful than ever; they make long and clamorous excursions in a train which stretches nearly a mile across the sky; its vanguard, which has passed, looks like dust against the blue, and when we think the last are passing another throng appears. The country of to-day has one melody at least which our forefathers never knew—who shall say what pleasant reflections and memories the hum of the busy threshing-machine does not awake in the mind of the casual hearer?

Somewhat later the starry-belted Orion will smile at eve across the misty fields, and the spider-threads will shine with frost. Meanwhile, as you tread some lane across which trees shake each other's skeleton hands, step reverently, for your "steps are on an empire's dust," and a glorious empire it was, and fell when its banners waved most gorgeously.

J. W. Cole.

BIRDS OF PARADISE.

THE efforts of the Selborne Society to prevent the extermination of these beautiful birds and to discourage the senseless and cruel fashion of wearing bird of paradise plumes in hats, together with the interest attaching to the varied and splendid decoration of the majority of the species, seems to mark out this group of birds for special consideration; and I hope the following notes on the Paradiseidæ, which I have studied for years, will interest other Nature lovers in this magnificent family.

The birds of paradise now known comprise nearly fifty species and are mostly confined to New Guinea. The most striking feature is the remarkable diversity in the ornamentation

of the male birds ; some with long delicate trains of flank plumes, golden orange or scarlet ; others with shields of glossy green, gorgets of fiery copper or ruffs of canary yellow, the females being mostly dull brown birds, little resembling their gorgeously clad partners. Birds of paradise may conveniently be divided into a long and a short-beaked group.

(1) The long-beaked group (*Seleucides*, *Epimachus*, and other genera). The twelve-wired bird of paradise (*Seleucides nigricans*) is perhaps the finest of the whole family, as will be seen from the following account of a magnificent male in full plumage which lies before me. The beak is black with a tinge of dark green ; the head is covered with short, velvety feathers of a rich purple, passing into green on the throat ; back, dark metallic green ; wings and tail, rich violet purple ; breast, nearly black, shot with green and purple and edged with brilliant emerald green changing to purple. Under parts ornamented with rich buffy yellow flank plumes, six pairs of which are produced as long wire-like bristles curving boldly forwards. This specimen was obtained in New Guinea, sixty miles inland, on April 23, 1896.

The female has the head very dark brown, almost black ; the rest of the plumage above, warm chestnut red ; below, very pale yellowish-brown barred with dark brown.

A male bird of this species was exhibited alive at the Zoological Gardens, Regent's Park, some years ago.

The sickle-billed bird of paradise (*Epimachus speciosus*) resembles the twelve-wired bird of paradise in its dark velvety plumage, but differs in the long tail and curved beak. Other related species are the *Epimachus Meyeri* (a fine pair of which I recently had the opportunity of examining and photographing) and the *Epimachus Elliotti*.

(2) The short-beaked group (*Paradisea*, *Parotia*, and other genera). The birds of the genus *Paradisea* are characterised by their long floating flank plumes which form graceful trains of feathers, and by the two central feathers of the tail, which take the form of long wire-like shafts.

The great bird of paradise (*Paradisea apoda*) has been longest known, and is a species in great need of protection, as it is being exterminated for the sake of its beautiful golden orange plumes. So rare has the adult male become that I was recently informed that a good museum specimen would readily fetch £5. I understand that some measure of protection for this bird has been promised in British New Guinea. The lesser bird of Paradise (*P. minor*) closely resembles the preceding and is also a persecuted species. The Augusta Victoria bird of paradise (*P. Augustæ Victoriæ*) is one of the few species of which the eggs are known. They resemble those of the rails in appearance. In the Marquis di Raggi's bird of paradise (*P. raggiana*) the flank-plumes are of a beautiful scarlet.

The red bird of paradise (*P. sanguinea*), though the plumes

are also red, differs much from the other Paradiseas. The plumes, instead of being long and floating, are stiff, white at the tips and curve round in a semicircle. The two long central tail-shafts are very stout and horny.

The blue bird of paradise (*Paradisornis rudolphi*), only discovered in 1885, is a bird of striking appearance. The head is of a rich bronze changing to green on the throat, the back is black, wings and tail brilliant blue. The breast is brown, the outer series of flank plumes yellowish brown; the rest, red or black at the base; and a very beautiful blue colour extends through the rest of the plume, which is of an exquisitely delicate structure. The above description is from an immature male from Mt. Victoria, New Guinea, the adult male possessing also a pair of long black wire-like shafts springing from the tail. The female has no blue flank-plumes. An adult male of this species may now be seen in the Bird Gallery at South Kensington.

The king bird of paradise (*Cicinnurus regius*) has the whole upper plumage a brilliant crimson, the feathers of the back being of a texture like spun glass. The throat is also red, in my own specimen being of a purplish tinge. A band of vivid green crosses the breast, and the lower parts are whitish. It has two curious additions to its plumage, a tuft of dark feathers banded with pale brown and tipped with green, springing from each side of the breast, and a pair of long shafts springing from the tail and ending in a closely rolled button-like feather, emerald green above and bronze below. These are all colours found only in the male; the female is a plain brown bird. I had the pleasure of exhibiting a male king bird of paradise at the Annual Meeting held in May, together with a pair of twelve-wired birds of paradise.

Lawes' bird of paradise (*Parotia Lawesi*) presents a great contrast in the appearance of the two sexes. The adult male has the plumage of a rich velvety black, and the additional ornamentation is very striking. It consists of (1) a small frontal crest of silvery feathers which can be raised at will of the bird; (2) an occipital crest of short steel-blue feathers; (3) six long shafts, three on each side of the head, terminating in racquet-like spatules; (4) long, thick flank-plumes of rich velvety black; (5) a magnificent gorget blazing with metallic colours, showing changing *nuances* of purple, violet, emerald green, golden green, and gold. The female has the head black, wings and tail blackish brown, breast warm brown striped with blackish brown. As regards my own pair, the male was shot in the Ea Ea district, and the female in Mt. Victoria district, New Guinea. I am sorry to say that this splendid species is now in demand for hats, and milliners will give a good price for a skin, the males being worth £1 each for this purpose.

The lesser superb bird of paradise (*Lophorhina minor*) is characterised in the male by the huge erectile crest of velvety

feathers attached to the back of the head. On the head also is a beautiful patch of metallic feathers, bluish green changing to purple and crimson, while on the throat hangs a forked shield of the same lovely colours. The greater superb bird of paradise (*L. atra*) much resembles the above, and a mounted specimen is in the Liverpool Museum.

I conclude with the species intermediate between the true birds of paradise and the bower birds. Of these the golden bird of paradise (*Xanthomelus aureus*), Macgregor's bird of paradise (*Onemophilus Macgregori*) and the regnet bird (*Sericulus melinus*) will serve as examples. Macgregor's bird of paradise is in colouration perhaps the strangest of the family, the contrast between the rich golden yellow, passing into golden brown, of the entire upper surface, and the rich chocolate brown of the entire under surface being most striking. A small tuft of upright yellow feathers stands at the base of the beak. This is a very rare species, and I am informed that eight only have been sent to this country. Of these seven have already been disposed of, and this week I had the pleasure of purchasing the only one left, a fine male in splendid condition.

I trust that these notes will cause others to take an interest in this magnificent but little-known group of birds, and shall be pleased to advise any intending students as to books, purchase of specimens, &c.; and I hope that an increased effort will be made to secure that these birds shall be effectively protected by a close season, lest they follow only too rapidly the fate of the quagga, the dodo and the great auk.

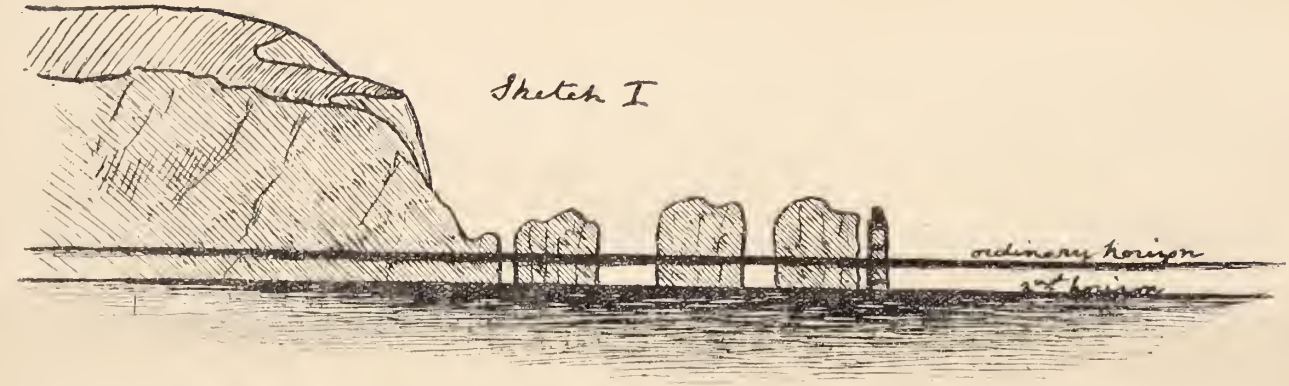
Graham Renshaw, M.B.

Sale, Manchester.

MIRAGE.

N June 12, I was taking tea at about 5 o'clock in a garden on the sea shore, opposite the Isle of Wight, and eight miles from the Needles. It was a sultry evening, hardly a breath of air stirring. One of our party was making a sketch in water colours of the scene before us, and, being in difficulties, resorted to a long telescope to try and get a proper view of the Needle Rocks. This she was unable to obtain, and, on her appealing to us to look in their direction, we all got interested in the following phenomena.

We saw first a dark horizontal line, some miles in length, which lay apparently above the water, cutting the Needles half way up, and the Needles looked taller than usual. Presently the water seemed to rise, obliterating the black line, getting above it, and at length leaving only the tips of the Needles and Lighthouse visible.



The Needles at 5. p.m on 12th June 1900
as seen from Mudeford, Christchurch, Hants

The new line of water, which did not get so high as a further line of the horizon, did not appear to be quite horizontal, but more in the form of an enormous whale's back, and drooping to the west.

The Needles remained almost hidden from view in this way for five or ten minutes, when they seemed to grow up out of the water to nearly their former proportions.

After a short time the dark line again appeared, followed by the apparent rise of water, and when I left my friend's house the Needles were still almost submerged.

The dark line was not, as we at first thought, formed by the smoke of passing steamers, but was undoubtedly the horizon seen at ordinary times in front of the Needles, and would be about five miles from where I was, my eye being some fifteen feet above sea level. Somehow a second horizon was visible below it with part of the Needles, making them look nearly twice their usual height with a black band across them.

The apparent rise and fall of the water may have been due, I think, to a cold stratum of air urged forward by thunderclouds approaching the other end of the Island, which broke with violence later on, at about 8 o'clock, over Hayling Island, thirty miles distant, but did not come to Christchurch.

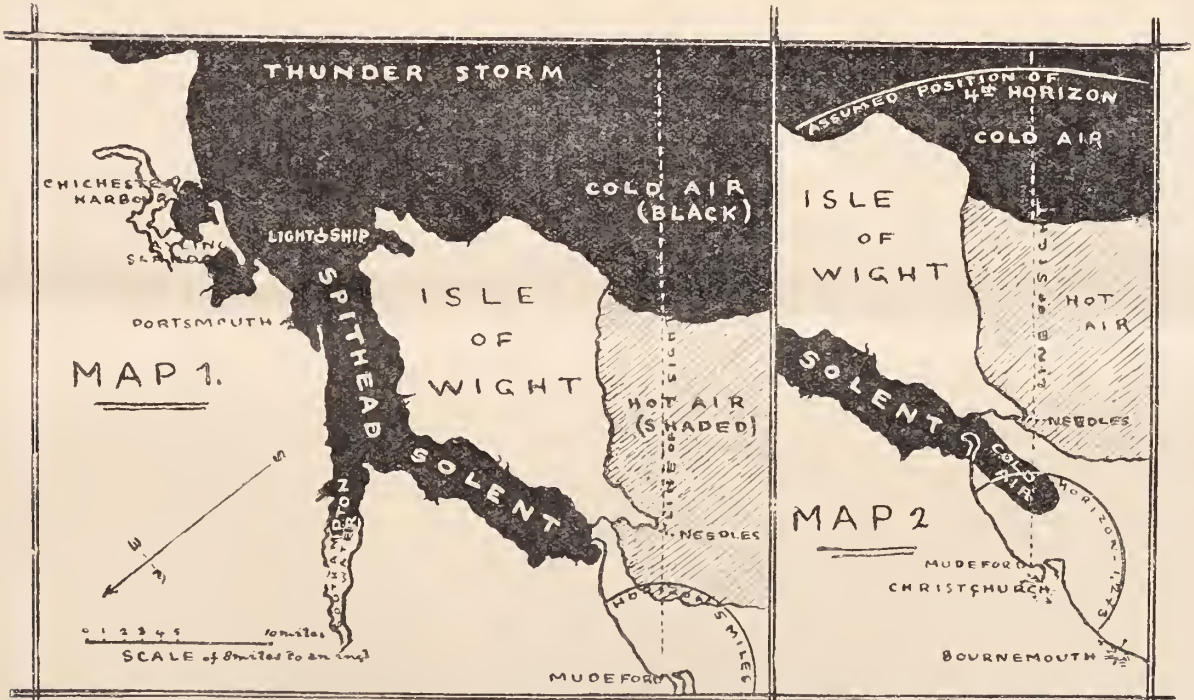
The rays of light from the surface of the sea in front of the Needles going obliquely upwards through this dense medium of cold air would, on striking the thinner medium of hot air, be refracted more or less horizontally towards the eye, and my idea is that the layer of cold air was shaped like a wedge, and that part of the wedge melted away when the phenomena changed. But a satisfactory explanation I must leave to someone more versed in the subject than I am.

The two sketches, though not pretending to any artistic merit, have been drawn with some care, and represent as nearly as I can make them what I saw. The changes in the picture give us four different horizons seen within the space of a few minutes. Those who critically examine sketch 1 will please remember that the ordinary horizon is three miles in front of the Needles, so that what is seen above it is only a portion of those rocks, and what is seen below it is not their base, but a repetition (not a reflection) of a part of the upper portion of the rocks. The sketch is therefore not like any near view they may have had.

Looking in the newspaper to see if any account were given of what I had seen, I found that a gentleman, writing from Hayling Island, described how a phantom row of houses had appeared at 4 o'clock, on the east of Chichester harbour, which was, I suppose, projected through heated air over cold from a distance, and a lightship had been made to appear quite close, so that he could see men moving on it.

Mirage phenomena have been frequently observed at the Isle of Wight, and the lady of the house where I was taking tea

Sketch I.s.
eye
5 miles
horizon in front of the rocks
HOT AIR
A
B
C
D
Needle Rock
AIR
ordinary sea line
2nd sea line
Sketch II.s
COLD AIR
3 miles
HOT AIR
ordinary sea line
3rd sea line
ordinary
Sections explanatory of the mirage at the Isle of Wight on the 12th June 1900



Maps to explain the Mirage at the Isle of Wight on June 12th 1900

tells me that on one occasion last year the effect was to pose a ship on top of the Island, as she and her friends plainly saw.

A remarkable case is recorded as having occurred at Hastings, on July 26, 1798, when the French coast, fifty miles distant, was clearly seen for three hours.

I have myself seen in the deserts of India, Arabia, and Egypt, the same mirage deceptions that have frequently been described by travellers, but I do not think it is usually known that objects are sometimes much magnified in a thin fog. I have observed this at sea, but was particularly struck by it a few years ago on Dartmoor. I had been fishing below Post-Bridge, and, raising my eyes from the river on nearing the village in the evening, saw the first cottage enlarged so as to look like some huge giant's dwelling. I then noticed that the mist was driving down the valley. On approaching the cottage it of course dwindled to its real size. It is obvious that such enlargement could not be seen in a dense fog, for the object would not be visible till you were quite close to it.

GILES A. DAUBENY.

July 7, 1900.

P.S.—Since writing the above I have discussed the phenomena at the Needles with a friend who has just graduated at Harvard University, and we have together worked out the following explanation.

We think that, when I first looked at the Needles, there lay about them a stratum of air that was several degrees hotter than that in which I was, the consequence being that the portion *A B* of the rocks was, by refraction, repeated at *a b* as shown in the section, sketch Is.

Then a layer of colder air than that in which I was, was creeping round the Isle of Wight, and, coming down the Solent, got between me and the horizon in front of the Needles, raising that horizon, by refraction, so as almost to hide the rocks. See section in sketch IIs., where the ordinary horizon *H* is raised to *h*, hiding the lower part of the rock at *z*.

Of course in the transformation there was a moment when the hot and cold layers were of equal power and neutralised one another, making the rocks look normal.

The fourth horizon in the distance was raised by another cold layer beyond the Island. I have not represented this in sketch IIs., as it would probably lie far out of the paper. The fourth horizon may have been visible throughout, though I did not notice it at first.

A portion of the near edge of cold air melted gradually, we think, as I have suggested. The thin edge of the wedge was to my right, as shown by the drooping third horizon in sketch II.

In sketches Is. and IIs. the horizontal distances between my eye, the ordinary horizon and the front of the Needle rock, are on a scale of half a mile to an inch. The vertical scale has had to

be very much exaggerated for clearness sake, I cannot tell how much, but probably 250 times. The near cold layer of air I have, at a venture, put as about three miles wide. I think it may have been ten or fifteen feet thick.

The popular reasoning of the matter is: take a cup of water, look down into it, the bottom appears above its real level. You are looking from a thin medium, air, into a denser medium, water. The bottom of the cup is raised a quarter the depth of the water. The reverse holds good when a diver looks from water into air, he sees objects depressed.

I hope I have made the whole explanation clear. It seems to me satisfactory, and I trust it may appear so to others, or, if not, that some one will clear up the complex problem. When I was looking at the Needles, dark thunderclouds were seen beyond the Isle of Wight, but for clearness sake I have not represented them in the sketches. A storm was probably raging in the Channel at the time: this would cool the air, and the cold heavy air would spread itself over the surface of the sea, creeping round the Island in the way I have suggested. I may add that had this cold air extended up to the Needles a different set of phenomena would have been witnessed, as the base of those rocks would have been raised.

I remember now that on many different occasions I have said to myself that I could not understand the look of the Needles, and I have frequently heard the lady who was sketching and others make the same remark.

I now more clearly recognise that variations in the air strata account for the apparent increase or decrease of the rocks: it often seemed to me that there was some other reason than the fall and rise of the tide only.

GILES A. DAUBENY.

July 26, 1900.

REVIEWS AND EXCHANGES.

Handbook of British Rubi. By Rev. W. Moyle Rogers, F.L.S. Duckworth & Co. Price 5s. nett.

There can be few better trainings for the observing faculties than "critical" botany. For this reason, in spite of not a little difficulty in its use—a difficulty which it would, we think, be mischievous to minimise—we have long recommended Babington's *Manual* even for tyros. We should, perhaps, hardly suggest the study of brambles to an absolute beginner in botany; but, independently of any views that may yet be tenable as to the fixity or non-fixity of some of the "forms," there can be no dispute as to the value of batology, which is, it may be well to explain, the study of brambles, as a botanical education. Just as, before the publication of the first edition of Babington's *Manual* in 1843, British botany in general had drifted away from the advance of the science on the Continent, so until the issue of *The British Rubi* by the same master-hand in 1869, the critical

study of brambles in England might practically have been described as non-existent. Nowadays, such a polymorphic group is as interesting to the evolutionist as to one who believes species to be fixed entities; but it is essential that we should be able to discuss British forms in comparison with those of the Continent. It was a misfortune that Hewett Watson seems only to have had a defective copy of Babington's *Rubi;* and similarly English botanists of to-day have been unable satisfactorily to compare the brambles now known with the descriptions of Dr. Focke, the chief Continental authority on the group, until Mr. Rogers published the present excellent monograph. We note that Mr. Rogers arranges the species and varieties much as he did in the ninth edition of the *London Catalogue* five years ago, and that he has only increased the number of the former from 100 to 103. The comital distribution summarised in the Appendix is, as no doubt the author would be the first to recognise, necessarily defective from the paucity of observers of such critical groups. While, for instance, in South Essex there are twenty-two species, four sub-species, and three varieties recorded, in the northern half of the same county there appear but six species and one variety. The book is excellently printed; and while it must be clearly recognised that there is no royal road to brambles, it must be admitted that by its publication, coupled with the issue of the set of dried specimens in conjunction with Messrs. Linton and Murray, Mr. Rogers has done all that can be done to make one.

White Cattle: An Inquiry into their Origin and History. By R. Hedger Wallace. From the *Transactions of the Natural History Society of Glasgow*, vol. v., n.s., parts 2 and 3, 1897-99.

As the author of this interesting paper gives a bibliography occupying 21 pp., whilst the remainder of his own paper only occupies some 88 pp., it would be rash to say that he has exhausted the subject. He has, however, got together and critically discussed an immense amount of matter of a most fascinating character from sources many of which are of the most recondite, and has illustrated his paper with seven excellent photographic plates and thirty-two other cuts, including many reproductions of curious old blocks. His conclusions agree with those of Professor McKenny Hughes, viz., that the Urus (*Bos primigenius*) appeared in Palæolithic times and became extinct in Britain long before the time of Cæsar; that the Celtic Shorthorn (*Bos longifrons*) appeared, with the Urus, in Neolithic times, and is the characteristic ox of the Bronze Age; that the Romans improved it by crossing with an Italian race, of which the Chillingham cattle are the nearest feral representatives, and that the Longhorns are a mediæval introduction from the Low Countries. A host of subsidiary questions, however, are also discussed.

Received.—*Knowledge*, *Science Gossip*, *The Naturalist*, *The Irish Naturalist*, *Humanity*, *Our Animal Friends*, *The Agricultural Economist* for August, and *The Animal World* for July and August.

NATURAL HISTORY NOTES AND QUERIES.

Dogs and Thunderstorms.—During a recent thunder and lightning storm I noticed a remarkable case of my neighbouring farmer's collie dog appealing, apparently to me, for protection from a coming storm. The dog very rarely comes on my premises, but on this occasion he appeared restless and frightened at the approaching storm, and came into the house and lay under my chair up in the farthest corner of the room (the safest place it should be noted), from where on the abatement he came out and walked off, and has not, to my knowledge, been on the premises since, although I frequently meet him in the road or on the farmer's premises. Call it instinct, or what we will, it was very interesting.

J. Hiam.

Late Cuckoos.—On page 159, last month, I referred to this subject up to July 5. One was singing up till the 10th here, and about two miles away one was singing on July 15, I was informed, thus breaking the record of July 13, 1879. In my last note I mentioned that I had neither seen a cuckoo's egg nor a young bird then, but several young cuckoos have come under my observation since; one I have seen daily up to the present time (August 9), being reared and fed by a hedge-sparrow, or accentor. When the cuckoo was in the nest I examined underneath the nest to see if I could find out if the cuckoo had ejected either the sparrow's egg, or its little bed-fellow-sparrows, but found neither, but a *second cuckoo's egg* instead, which had evidently been ousted by the occupant; it was badly cracked and contained a young bird ready to hatch out.

I am often asked by neighbours if I know where the cuckoos go to pass the winter, and I am unable to give definite information. Can the Editor or any of our correspondents kindly inform us from observation, or from reliable sources, *where they are found in foreign parts in winter?* Some people who are ignorant on the subject believe that they "turn into hawks!" others that they "turn into toads!" probably from the fact that cuckoos, when about a week old and when found in robins' nests, much resemble a toad sitting in a hole in a hedgerow bank. But, as many readers know, when a young cuckoo can see he raises himself up and down, blows himself out, and pecks in a defiant method, apparently to frighten off any intruder on his domain.

Astwood Bank. J. HIAM.

A Plague of Blackbirds.—As I sit penning these few notes a blackbird comes within about three yards of the window pecking at some *half ripe* plums. About half the crop has already disappeared. The blackbirds have increased to such an extent under the Wild Birds Protection Acts, and not taking their eggs, that fruit crops of all kinds are devoured to such an extent that it is disheartening to try to grow fruit in country places. At our local gardeners' Society's meeting on Tuesday night the members say they are swarmed with blackbirds and thrushes in their allotments and gardens, and it is difficult to grow fruit, and of course netting everything is out of the question.

Astwood Bank. JAMES HIAM.

A Blackbird's Defence.—A pair of blackbirds built in a garden this spring in a laurel hedge, and when the young ones were hatched, the cat thought he would like to have one for his dinner,—but the old cock bird was too sharp, and seeing Mr. Puss approach the nest, flew out on to the back of the intruder, whereupon the cat, terribly frightened, turned and fled across the lawn with the bird still on his back pecking him, until an open window proved a refuge. The bird then left the cat, thinking probably that he had punished his victim enough, if one may judge from the noise that was made, and I do not think the cat ever again molested the sweet songsters.

Bournemouth.

Late Nesting.—The late spring appears to have had an effect upon the birds, some of which have continued their breeding far into the summer. On July 1, a thrush was observed sitting on a second brood in the same nest; the young left the nest on the 14th. A few yards off a pair of flycatchers were carrying food to their nest as late as July 5. The nest was too far from the ground, high up in the fork of a beech tree, for the date of flight to be noted. On July 1, a pair of wagtails appeared on the lawn, feeding three or four young birds, evidently just from the nest.

W.

Missel Thrush.—On June 15, a missel thrush was heard and seen (a somewhat unusual sight here) sitting on an iron fence in the garden, and again on the 16th in the same position, at intervals during the day. On the evening of the 16th it was seen on the lawn accompanied by a single young one, the latter, a strong healthy bird, but almost without feathers, and quite unable to fly. On the 17th and 18th the young bird was still in the garden in the long grass, and among the flower beds, tended and fed all day long by both the old ones. After this the young bird was not again seen, though both the parents were in the neighbour-

hood for a day or two longer, after which they entirely disappeared. The curious part of the matter is that no nest could be found, and if the young bird was reared outside the garden it is difficult to understand how it got in, being bounded as it is on one side by a high wall, and on the other by a sunk fence. And again, why was there only one young bird?

W.

Redstarts.—In the summers of 1897 and 1898, redstarts were fairly plentiful in this garden (West Yorkshire), but in 1899 and the present summer not a single bird has been seen. Is the redstart decreasing in numbers, or is there any way of accounting for their partial appearance?

We are sorry to read that "In France redstarts and flycatchers are caught in great numbers, being highly prized for the delicacy and flavour of their flesh." The flycatcher, however, has been unusually numerous here this year.

W.

House Martins and Swallows.—Mr. James Hiam has not observed that there is a scarcity of house martins this year, also in a few previous years, and this scarcity may be confined to the district in the west of England under my observation. But the absence of the former abundance of this particularly homely and tame bird in these south-western parts is undoubted. I should be glad if some of your correspondents could account for this falling off of our intimate friends in their visits for the last year or two. If their absence were limited to this particular spot it would not be worthy of notice, but it is most marked over a large district. It is to be hoped that in course of time they will reappear, but I have remarked the change the last three years. It cannot be because I destroy their nests in the winter, for that would be applicable only to this place. Here, swallows are far more abundant than usual this year. Do swallows and martins feed on the same flies? And if so, is there a rivalry between them in their flights for food? They never appear to contend for food, and the supply of the particular small fly that they feed on is generally ample. That house martins in this district should have been for many years more numerous than swallows, but for the last few years should be scarce, and apparently superseded by swallows, is an interesting fact which I should be glad to see explained. The numbers of wild birds vary. A few years ago thrushes were very scarce here, the result of a very hard winter, and blackbirds, the hardier bird of the two, flourished exceedingly. Now the thrushes are in their usual numbers. Possibly a very large quantity of house martins were wrecked on passage in a stormy year, and they have not yet recovered their proper number. For myself, I prefer martins to swallows. There are a few birds which are increasing in numbers, due probably to the action of gamekeepers; amongst these I should put the common woodpigeon and the starling, the rook also perhaps. The sparrow may be increasing too, and he is a nuisance, because he drives away all other small birds, especially the songsters.

Woodtown, S. Devon, W. F. C.
August 4, 1900.

More Swifts than Martins.—There have been a remarkable number of swifts in the neighbourhood of Thornton Heath and Croydon this year. The martins, and the swallows especially, have been fewer than ever, but the unusual number of swifts has attracted the attention of many. Has this unusual proportion been noticed elsewhere?

EDWARD A. MARTIN.

House Martin (p. 138).—In common with your correspondent Mr. W. F. Collier, I have remarked for several years past the increasing scarcity each season of our little snowy-breasted friend, the house martin. The other spring migrants too have been anything but numerous this year in the part of Berkshire from which I write, and I have missed the notes of several species familiar enough at one time—the wryneck, grasshopper warbler, landrail, &c. The chiff-chaff and willow-wren also have been decidedly scarce in the woods and coppices. Even that "messenger of spring," the cuckoo, sang but little, and the nightingale appeared in very limited numbers. In the years 1893 and 1896 both

of these well known birds occurred in the district in especial abundance, so much so as to attract the attention of persons not given as a rule to remarking on the sights and sounds of rural life. Altogether the spring of 1900 has been somewhat disappointing. One beautiful entomological object, however, I was glad to see again, viz., the azure blue butterfly (*L. argiolus*) flitting round my shrubs towards the end of April. I had not seen this delicately-tinted species in Berkshire since 1872.

Fyfield, near Abingdon. W. H. WARNER.

Eccentric Nesting of the Great Titmouse.—On May 22, 1899, my friend, Mr. James Hunt, of this village, took me to see one of the most interesting nests I have ever met with. In a yard adjoining an hotel, and close to a busy railway junction, there is held every month a sale of stock—the place becomes crowded with farmers, drivers, auctioneers, and with cattle, sheep, and pigs. So great is the crowd and confusion that it is not always very pleasant to pass that way when the sale is in full swing. It happens that in this yard there is an old seed-drill which has for some reason or other fallen out of use: it stands just where the auctioneer's platform is raised, and is moved (so I am told) to make room for it. It has four boxes, with lids, in which the seed is put when the machine is at work, and attached to each box is a narrow curved pipe, through which the seed drops out on the ground as the machine is driven over a field. When we reached this object Mr. Hunt opened one of the lids, and there in the box was the nest of a great tit, containing eleven beautiful eggs: the nest was substantially built, but all the materials had been brought into the box through the narrow pipe below it. In spite of the confusion of at least one sale, in which the titmouse had to give way to the auctioneer, the nest escaped, and the young brood was successfully reared.

This year it never occurred to me to see whether any of the boxes had been utilised in the same curious way—one would suppose that the bird, glad to have escaped the natural penalty of her rashness, would have looked out for a safer place. But there is no accounting for the ways of birds, any more than for the ways of human beings. This morning Mr. Hunt beckoned to me as he was working in his allotment, and entrusted me with the secret that the same bird (as we may fairly presume) has already reared one brood in the seed-drill this year, and is now engaged with another! As I was going down to the station I took an opportunity, when no one was about, of getting into the yard and examining the drill. I opened the lid of the same box which had been tenanted last year, and there, sure enough, was not only the nest, but the bird herself. As she entirely declined to leave her eggs, though my hand was not more than a few inches from her, I softly closed the lid and left her to herself. I have not the least doubt that she will rear this second brood. There must indeed be some, both boys and men, who know of the nest besides Mr. Hunt and myself; but, thanks to the growing humanity of our species and the gradual advance of the principles of the Selborne Society, this confiding pair of titmice need stand in no fear of them. W. WARDE FOWLER.

Kingham, Chipping Norton, June 20, 1900.

Boxes for Birds.—Last year I related an instance of a tomtit turning a pair of nuthatches out of a box in which they had commenced to nest. This year the nuthatches have reversed matters by ousting the tits. In another box a brood of tits has been reared. Then a hornet adopted the box and commenced to make its comb, but was ejected. After this, a bumble bee made her hive in the box among the *débris* of the tit's nest.

Market Weston, Thetford. EDMUND THOS. DAUBENY.

Morality in Domestic Pigeons.—I had occasion a week or more ago to kill the hen bird of a pair of domestic pigeons, which had just hatched and brought off two young ones. My reason for so doing was that I had had for some months an odd hen bird of a more suitable kind, towards which I hoped the widower would make matrimonial advances. Judge, however, of my surprise when, within forty-eight hours of the death of the hen, on looking into the nest I found the erst-while unmated bird sitting on two eggs and being

assiduously looked after by him on whom the sorrows of bereavement had sat so lightly! Surely this is most unusual, and, I trust, confined to domesticated birds! This circumstance leads one to suspect that morality in pigeons of the present day leaves much to be desired.

Fylton Rectory, Bristol. A. C. MACKIE.

The Toad.—On July 20, while some repairs were being carried on in our church, a skeleton was discovered at about the depth of six feet under the pavement, and in the skull a large yellow toad. The theory of the man who found it is, that the creature was there in the man's lifetime and grew after his death! Even supposing that it found its way there about thirty years ago when the church was restored, how did it subsist at that depth from the surface without air or food? Can anyone explain it?

North Moreton Vicarage, Wallingford. M. S. N.

Leaf-Cutting Bees.—One of these bees has taken up her quarters in the woodwork of my porch. Underneath the entrance to the nest are scattered seventy or eighty pieces of leaf which the bee has dropped in her efforts to drag them through the hole, a loss of time and labour which reminds one of the collection of sticks underneath a jackdaw's nest in the tower of a church. These pieces, which are from a Judas tree close by, are as large as an oblong sixpence, and are cut from the edge of the leaf with great rapidity. The process of cutting and carrying away takes five or six seconds.

Market Weston, Thetford, July, 1900. EDMUND THOMAS DAUBENY.

Bumble Bees.—In what part of the body of insects some of their senses reside is not yet known. How a fly hears or smells is one of the unsolved problems in its history. A bumble bee that has made her nest underneath the floor in one of my outhouses has called my attention to these matters. The outhouse has a door, but no window. When leaving the nest the bees run *straight* along the floor to the door, about eight feet, in the ordinary way, evidently guided by sight alone. On their return, however, and when travelling away from the light, their attitude and tactics change. The eyes seem no longer to be used, the hinder part of the body is raised, while the head is held close to the ground, as if they smelled their way, quartering the floor in this and that direction like a terrier on the scent of a rabbit. From this one would suppose that the organs of smell were placed in the bumble bee's head.

Market Weston, Thetford, July, 1900. EDMUND THOS. DAUBENY.

An Abnormal Foxglove.—Abnormal growths of the foxglove are not altogether uncommon, but one that I have seen this year seems rather extraordinary. It was found by Mr. M. Davis, one of our Croydon members, in his garden. One of the flowers near the head of the stem had opened out almost exactly like a hollyhock, the inside of the corolla being ornamented with the usual dots of the purple foxglove. Stranger still, there were no less than thirteen stamens. After this flower had blossomed and fallen, two others opened out, and resembled very closely in shape and size the common Canterbury Bell. The phenomenon seems to suggest crossing, but the foxglove and the hollyhock scarcely flower at the same time, unless the topmost flowers of the former are sometimes delayed until the earlier flowers of the latter make their appearance.

EDWARD A. MARTIN.

[Such fasciated terminal blossoms are not unconmon. We have a photograph of one recently received from a correspondent with a similar suggestion of crossing, which is, however, quite impossible.—ED. *N.N.*]

CHILDREN'S CORNER.

The Whale.—Two little boys of eight were taken round the Whale Room at the Natural History Museum, and afterwards wrote their recollections as follows:—

(1) "A Whale has its ribs not joined to its backbone like we hav but a very little space betw— een and when they wont to go to the bottom for an hour they must they take a lot of air down and then their ribs go father and father away from the backbn—e and then they hav an nuf air to lif."

(2) "I am going to teel you About a Whale. The Whale has a very very little ear it cannot hear with it and a very small eye too. And it has a hand with fingers just like wee. And some of them have no teeth and inside their mouth they have a sote of hair caled Whalebone. He has a very little throat and a very big backb—one. And now I have finished."

SELBORNE SOCIETY NOTICES.

Council Meetings.—The next meetings of Council will be held at 20, Hanover Square, W., on Tuesdays, September 4 and 18, at 5.30 p.m.

Library.—The Council acknowledges with thanks the receipt of F. E. Beddard's "Animal Colouration" for the Library from Mr. A. E. Malaher, and also the "Year Book of the (United States) Department of Agriculture, 1899."

FIELD CLUB RAMBLES.

June 30.—In spite of very threatening weather a party of fifteen assembled at Hendon Station and essayed the walk to Harrow. The route lay for the most part by foot-paths through fields of grass, which waited but for a dry day to be cut. Piper's Green and Preston Bridge were passed through, many fine views of Harrow being obtained on the way. The members were very hospitably entertained to tea by Mr. and Mrs. Bosworth Smith, who afterwards increased the pleasure of their visitors by showing them their large collection of curios, and taking them over their most delightful grounds on the slope of the Hill.

July 21.—On this Saturday, one of the pleasantest rambles which have been arranged by the Croydon and Norwood Branch, took place under the leadership of Mr. George Clinch, F.G.S. The afternoon was spent in crossing Hayes Common, and tea was taken near the Fox Inn on Keston Common, a party of twelve sitting down to table. The principal event of the ramble was a visit to Holwood Park, by kind permission of Mary, Countess of Derby, and Lady Margaret Cecil. The site of the pre-Roman encampment, or old British stockaded village, was first visited. Both inner and outer rampart are now covered with a luxurious growth of bracken, whilst the intersecting paths are soft to the foot with the accumulations of years of moss-growth. Overhead, fine old trees, cedar, Scotch firs, oaks, silver birch, and others, gave welcome shade from the exceptional heat. There can be no doubt that the Wood Lakes, which were then visited, gave even greater satisfaction than Cæsar's Camp. The recollection of the views here seen will remain with the ramblers many a long day. A trickling stream of no mean dimensions has been dammed up into a series of lakes, each a step lower than its predecessor, and around the edges of the water, choice wild flowers found their habitat. In the upper lake were found the water-bur-reed (*Sparganium ramosum*), the water-plantain (*Alisma Plantago*), flags, and cats-tails, and in rapid succession as the lower lakes were reached came purple loosestrife (*Lythrum Salicaria*), meadow-sweet (*Spiræa Ulmaria*), enchanter's nightshade (*Circæa lutetiana*), and bog-bean (*Menyanthes trifoliata*). In one place was a mass of meadow crane's-bill (*Geranium pratense*), whilst ragged-robin (*Lychnis Flos-cuculi*), wood-betony (*Stachys betonica*), agrimony (*Agrimonia Eupatoria*) and hare-bells were plentiful. At the sides of many of the paths through the woods were hundreds of self-sown rhododendron seedlings, and in other places lily-of-the-valley showed as many young plants. A swan's nest

attracted a fair share of attention, whilst a seat round the "Twelve Apostles" afforded a cool and shady seat and resting-place. The beech-tree known by this name has twelve separate stems. It was estimated to measure thirty feet round at six feet from the ground, and the outer circumference of its branches was estimated at 234 feet. After a couple of hours spent in the park, there was just time before nightfall to visit Keston Common and ascertain that sundew (*Drosera rotundifolia*) was still growing there. Bog asphodel was found in good numbers. Ling was not yet out, but common heath (*Erica cinerea*) and cross-leaved heath were found. A walk through the twilight brought members back to Hayes Station, whence, with the customary punctuality of the railway company, members were conveyed without any undue haste to their respective destinations.

FORTHCOMING RAMBLES.

Saturday, September 1.—**Epping Upper Forest and Ambresbury Banks Ancient Camp.**—Train leaves Liverpool Street 2.41 p.m. Meet at Theydon Bois Station. Return tickets available from Chingford. Guide, Mr. L. B. Hall.

September 8.—**Richmond and Teddington.** Leave Waterloo at 3 p.m. Meet at Booking Office, Richmond, at 3.30. Then take 'bus to Petersham. Walk to Teddington. Tea at "The Anglers" at 5.30. Guide, Miss Cadman.

September 15.—**Marden Park to Godstone.** Return from Caterham. Book single to Woldingham. Tea at Godstone if train is fairly punctual. Victoria (L. B. and S. C. R.), 2.30; London Bridge, 2.25: East Croydon, 2.59. Guide, Mr. E. A. Martin, F.G.S.

September 22.—**Ramble Round Leatherhead.** Train leaves Waterloo 1.32. Meet at Booking Office at Leatherhead at 2.30. Take cheap return tickets, 1s. 9d. Guide, Mr. A. B. Wilkinson.

September 29.—**Ranmore and Westcott.** Leave Charing Cross 2.6 p.m. Take return tickets, price 3s. 3d., for Dorking. Assemble at S.E.R. station at 3.30. Train from Victoria at 2 p.m., reaches Dorking (L.B. & S.C.R.), a mile from the rendezvous, at 3.10. Walk up to Ranmore and down to Westcott, where tea will be taken. Guide, Professor Boulger.

ANSWERS TO CORRESPONDENTS.

Novice.—Unfortunately your specimens came when I was on my holiday, and are faded almost beyond recognition. (1) *Hypericum perforatum*, Common St. John's-wort; (2) *Veronica agrestis*, Green Field Speedwell; (3) *Anagallis arvensis*, Scarlet Pimpernel; (4) *Polygonum aviculare*, Common Knot-grass; (5) *Lapsana communis*, Common Nipple-wort; (6) Quite unrecognisable; please send another specimen, if possible.

E. E.—*Potentilla norvegica.*

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 130. OCTOBER, 1900. Vol. XI.

SELBORNIANA.

Local Corresponding Secretaries.—The Council have decided to invite the leading Natural History Societies in those places in the United Kingdom where no branch of the Selborne Society exists to nominate, from among their own resident members, an Honorary Local Corresponding Secretary of the Selborne Society, who is to receive Nature Notes for at least a twelvemonth, and who will form a channel of communication for, it is hoped, the mutual benefit of the societies.

Forthcoming Life of Gilbert White.—Mr. John Murray announces in his List of Forthcoming Publications a Life of Gilbert White, based on letters and other documents not hitherto published, by his great grand-nephew, Mr. Rashleigh Holt White, one of our Vice-presidents, with illustrations from family pictures and including a journal for 1763 by one of the "Miss Batties," in two volumes, demy 8vo.

Philistinism in the Lake District.—Every one who has any appreciation of the charms of natural scenery must have heard with amazement, horror and indignation that it was proposed to run a system of electric tramways, by that "overhead" system which necessitates pairs of posts at frequent intervals with transverse and longitudinal wires, from Windermere to Ambleside. Naturally many local residents, including our energetic Vice-President, Canon Rawnsley, were at once up in arms, and letters and articles in the press showed that the beauty of Lakeland is treasured not as a local, but as a national possession. The scheme was reported to be abandoned; but this unfortunately proves not to be the case; so that the opposition

must not in the least relax their careful watch over the public interest in the matter. An absurd attempt has been made to draw a parallel between this proposed line and that in the city of Rome. Many may weil regret that the latter was ever established; but it at any rate is in a city and not in the midst of wild nature.

Distress in India.—Indian agriculture, whether engaged directly in the production of food or in that of clothing, is always hovering on the verge of famine. In an article contributed to the *Madras Mail* of March 27, Sir Charles Lawson states that in some parts of the Empire "one-fourth of the cotton crop is sometimes lost from the ravages of one insect, *Depressaria gossypiella*," and the *Madras Mail* in this and in a subsequent article points out that the wholesale destruction of insectivorous birds for the sake of their plumage leaves grain and cotton fields alike at the mercy of insect pests, thus causing "a deplorable sacrifice of human food and the materials of human raiment, besides inflicting penury on individuals and great loss on the State." The Society for the Protection of Birds, which has reprinted these articles as a leaflet entitled "India and her Wild Birds," is endeavouring to establish an Indian Society for the Protection of Birds.

Malvern Hills in Danger.—A Worcester syndicate has approached the conservators with a project of a funicular railway up the Worcestershire Beacon. Some of the conservators favoured the project, which seems to be in abeyance at present, as the Syndicate did not send a definite scheme, as was expected, to the last meeting of the conservators on September 12. It is to be hoped that this railway will never be introduced. It would entirely destroy the quiet beauty of these hills so dear to all lovers of Nature. There is no excuse, as zigzag roads and green paths with frequent seats have been skilfully engineered, so that the ascents are possible even to invalids. It would indeed be a pity if, in the interest of a few summer trippers, the charm of these unique hills should be so grievously impaired.

Gunners on the Broads.—"A Norfolk Bird-lover" writes: "The destruction of bird life on the Norfolk Broads has, in my opinion, been greater than ever this year. Whether the desire to kill has been fostered by the war-fever I know not, suffice it to say that almost every pleasure party seems to have had one or more guns: air-guns especially are very popular, as they are practically noiseless and inexpensive. These latter, however, are not of the destructive power of the shot gun, but there are sufficient of the latter to make the slaughter of reedbirds, coots, moorhens, &c., almost phenomenally great. The worst feature is the pure wantonness of it all, for the dead and wounded birds are seldom retrieved, and days afterwards are found fluttering pitifully in the reed beds where they gradually starve or drown.

Cannot something be done to stay this illegality? Could not gun-licences be made to run from September 1 to March 1, and let gun-carrying in the off-season be illegal save on a man's own land? But the question bristles with difficulties; one only knows that the present law appears most difficult to enforce."

"A Norfolk Rectory." — Mr. Henry S. Salt, of the Humanitarian League, sends us the following:—"From the Rev. E. T. Daubeny's assertion that, whatever his critics may say of him, he will continue to shoot rabbits and catch fish, it appears that he has somewhat misapprehended the protest which his article called forth. What we objected to was not Mr. Daubeny's personal indulgence in blood-sports, but his glorification of them in Nature Notes as characteristics of 'a sweet home.' We did not venture to hope for Mr. Daubeny's conversion to humanitarian principles, but we did think that such an article as 'A Norfolk Rectory' was more suitable for the *Country Gentleman* or *Rod and Gun*, than for a paper which appeals to the humane.

"The two reasons which Mr. Daubeny gives in defence of his blood-sports are far from convincing. First, that some lovers of animals do not know what they write about, as in the case of one who confused jackdaws with rooks. It is true that the Londoner's ignorance of natural history is sometimes deplorable; but such ignorance cannot in the least disqualify a man from protesting against cruelty, a question involving a *moral* judgment of a wholly different sort.

"Secondly, Mr. Daubeny reminds us that when we boil water we destroy infinitesimal forms of life, and asks where we draw the line 'between boiled rabbit and boiled bacillus.' One might as fairly ask Mr. Daubeny where *he* draws the line between boiled rabbit and boiled missionary. His assumption that, because destruction of the lowest animalcules is inevitable, it is therefore justifiable to make 'sport' out of the sufferings of highly sentient beings, is not only bad logic, but fatal to all morality. A cannibal might excuse himself on the same grounds."

OCTOBER JOTTINGS, 1899.

PERFECT autumn weather! St. Luke's summer has not failed to justify its name this year. Day after day of almost cloudless sunshine, and gentle breezes, making outdoor life a blessing to all who can live it, and so incomparably superior to those London fogs whereof rumour and the daily papers have spoken! Here on the Hampshire downs is air and plenty of it, a good lungful of healthy and undefiled breeze, to which smoke and soot and the varied odours of city atmospheres are quite unknown.

Many an afternoon during this delightful time has a seat upon a gate on the top of Compton Down given opportunity for autumn jottings, and none but the most inveterate lover of the city life could have failed to find some sort of interest. Artist or naturalist, sportsman or lover of the beautiful, can all have found something to their taste in this quiet spot. Here on the highest point of the Down is a coign of vantage whence the eye can travel southward over the woods and farms of South Hants, from the tree-clad slopes of Cranbury Park, down the Itchen Valley, towards the coast, where so many of our soldiers have just been embarking to serve Queen and country in our South African colonies; eastwards across the valley to another range of downs; northwards to Winchester, whose outskirts are just visible, creeping up the hills that hem in the ancient city, most noteworthy of them St. Catherine's hill, with its clump of wind-swept beeches, a prominent feature in the landscape; westwards towards the hollow where Hursley lies; and beyond that Farley mount and the woods round Ampfield.

We are on historic ground. Up yonder valley of the Itchen pushed Cerdic and his invading forces to found the kingdom of Wessex, greatest of the early English kingdoms. Cerdic is a name we can never forget, for is it not the fact that he was the ancestor of that famous line of kings, whose present representative, our most gracious sovereign Lady Queen Victoria, now fills the throne of England. And another famous name of days long gone by is inseparably connected with this spot, for in that ancient city of Winchester, so long the capital of the English land, the great and good King Alfred ruled the realm, which he had saved with so much patient bravery and skill from the invading hordes of heathen Danes. And when the thousandth anniversary of his death comes round in 1901, may Winchester and all England conspire to do honour to the memory of one of England's greatest men, and England's Church enrol in her calendar the name of one of England's greatest saints. For Alfred was truly this, saint, as well as warrior, statesman, king.

Far different is the judgment passed by his contemporaries, and confirmed by posterity, upon another king of whom the recollection comes to us. Along the road from Romsey, through Hursley to Winchester, would have come the charcoal-burners of the Forest, carrying the body of the Red King, found in so mysterious a way in the forest glades, dead from an arrow wound, his hunting party fled, not one to render the last offices to the King in whose suite they had gone forth to hunt in that Forest, which, not many years before, his father had placed under the operation of his Forest laws.

And yet another name, of one of a far different class to these English and West Saxon kings, and of a recent time. Only a short distance away, hidden in the hollow of the surrounding woods, lies the little village of Hursley, made famous as the scene of the life-labours of that humble and saintly priest, John

Keble, the author of the "Christian Year," one of the leaders of the Oxford movement, and one who, amid all the storm and tumult of the great secessions, remained faithful to the English Church. Who would know of this little village were it not for the name of this saintly vicar, who has made Hursley famous to thousands who will never see it, but who know it simply as Keble's parish?

All these names have made their way out of the storehouse of memory on these autumn afternoons. But there is so much of the actual living present to appeal to the sense of sight and sound that the past soon flies away. This seat upon the gate is by the side of a green grass-grown path that leads from the open down between tall thick hedges to Silkstead Farm. Hour after hour may be passed here in solitude; it is only when some party of sportsmen has come up from the big town down the valley, or a stray shepherd or gamekeeper passes by, that the solitude is broken. But if human beings are lacking, there are many of nature's wonders, for the bright mild autumn has kept the country from putting on the aspect of winter, and the coverts are thick as yet, and the pheasants and partridges have a better chance of life than in some seasons at this time. We are on the chalk here, and everything is characteristic of the vegetation on that formation. But only a little way off, the chalk ends, and the hills to the south are where the gravels and sands begin. On Compton Down, therefore, one style of vegetation is to be seen, but on Otterbourne Hill and in Cranbury Park, only a couple of miles away, it is all quite different.

From this seat upon the gate, then, we look upon the thick hedgerows of the chalk downs, and can note what is to be seen growing in them. It is no trim-cut hedge of uniform height and prosaic primness, but as varied as can be. Here a tree and there a bush, and everywhere a mass of creeping, climbing plants; sometimes narrow, sometimes widening almost into a copse; such is our chalk-down hedge. Tallest of its component parts within view of the gate is the ash, looking even in mid-October almost as fresh and green as when its leaves were first out in early summer, but soon to be stripped by the advent of the frosts. It is a tall and graceful tree, and in sharp contrast to the neighbouring yew, dark and sombre, and spreading widely, although even then overtopping the usual height of our hedge. There is always something funereal about the appearance of the yew tree; perhaps this had something to do with its constant appearance in churchyards—our forefathers thought of it as harmonising with the mourners' grief, and so planted it amongst the graves. (There is a famous big yew in Twyford churchyard hard by.) Its small red berries make no great show, and perhaps that is as well, for the yew is to be avoided as an article of food for man and beast. But sombre as the tree undoubtedly is, it serves well now to show off by contrast the lovely autumn tints of the deciduous trees around it.

Perhaps just here the most striking tints are those of the maple and dogwood—the former a bright yellow, the latter a deep wine-red. There is an abundance of each in our hedgerow, but the maple, beautiful as it is in its autumn dress, lacks one prominent feature which distinguishes it earlier in the year; in the early summer its "keys" bear off the palm for beauty, but they have fallen before this, and the leaves alone remain. The dogwood, too, has another style of beauty in the early summer when its white flowers are out, but does not suffer in comparison now; none of the leaves in the hedgerow are such a deep red as these.

There are other inhabitants of the hedgerow still, which will be as familiar, even to the city-dweller, as his own plane trees in the streets, the brambles, the wild roses, and the thorns. Truly the blackberry is the poor man's fruit: here he can have it for the fetching: every hedge is full: great sprays of black, luscious fruit are hanging everywhere: no poor shrivelled-looking specimens, such as show themselves in the immediate neighbourhood of the bricks and mortar, but real juicy fruit, and bushels upon bushels of it, only waiting for the picking, and pick as much as you will, there will be more to-morrow, until the frost comes and spoils it all. A few traces here and there show that the ubiquitous boy has been at work and had his fill, for there are signs of his head amongst the bushes, but he cannot take all: there is an unbounded field. The bramble *leaves* are worthy of notice also, even though their glory pales before the glory of the fruit: their tints in autumn are lovely and varied, sometimes a yellow, sometimes a red, approaching even to the richness of the dogwood. And oftentimes another point to notice is the way in which the leaves are ruined by some tiny leaf-mining caterpillar, who has left these visible tokens of his former presence behind him.

The roses and the thorns are bright with their hips and haws, a promise of good store for the birds when the ground is hard; but they have begun to attack this store of provender already, It is the berries alone that make the thorns beautiful in autumn, but the roses have sometimes, in addition to their berries, some bright-coloured galls, which give an added beauty. These however, are not the plants' own: they are an extraneous growth, due to the presence of the grub of some gall-fly, round whose soft, fat body this growth collects. Other instances are the familiar oak-apples, large and small. A knife cutting open the gall will reveal the grub within; or if the gall be dry and hard, a little hole will mark the place whence the fly emerged. It is easy to discover what sort of a fly a gall-fly is by taking some of the common, hard, round oak-galls and putting them in a box, until the fly comes out and reveals himself.

Even yet we have not exhausted the tale of the trees and bushes that make up our hedgerow. There are still the hazels, looking rather shabby now, for their leaves cannot vie with some

of the others round about, the sloe-bushes, the privet, with its black clusters of berries, and here and there an elder, black-berried likewise.

The creeping, climbing plants claim our attention next. All over the hedgerow, climbing up the brambles, struggling even to the top of the yew-tree opposite, is the wild clematis, the traveller's joy, with its silky-looking tufts conspicuous above everything else. We may well be confident of our immunity from molestation by the natives here, if the old belief have any foundation in it, that the "traveller's joy" will never grow save on the ground of an honest man. But there is room for doubt as to the infallibility of the saying, for no creeper is commoner than this one all over the chalk downs of the south, and none is prettier. And mixed with it here and there are the bright berries of the bryony straggling in the hedge.

But this is the great time for the ivy. There is not so much of it up here on the down as below, but enough to be noticeable; and even if the eye does not notice it at once, if but the sun is shining the ear will soon be saluted by the sounds of insect life that make its presence known. For the ivy is flowering now, and bees and wasps and belated butterflies hold high revel amongst its sweet-smelling blossoms. There is little else for them to feed on now that October has come, and most of the sweet flowers are over and perished, but a mass of ivy bloom on a sunny day is an enlivening sight; every cluster of its flowers is furnishing a sweet meal to hungry wasp or bee, and were the insect hunter to be out on some mild evening with his lantern, no doubt the moths would be seen holding high festival where their hymenopterous cousins have been disporting during the sunny hours; for ivy shares with the sallows of the spring the honour of being the greatest favourite of the insect hosts.

Lower down in the undergrowth there is not much to strike the eye at this late season, for most of the herbaceous plants have died down long ere this, but just a few survivals give a last parting hint of summer glories. There is the woody night-shade, or bittersweet, with its berries growing close beside the gate—a plant that often gets a worse name than it deserves, for it is not the *deadly* nightshade. That is the *Atropa Belladonna*, and a very different plant, with dark, almost repulsive bell-shaped flowers and large leaves, a rarity too, not often found. But this woody nightshade is own brother to the potato and tomato, as a look at its leaves will tell everyone who knows the cultivated garden forms of those species of *Solanum*. The berries, however, must be let alone. A few bracken ferns adorn a corner of a gap just opposite, where a cart-track leads through to a cultivated field, and some withered stalks of knapweed and a few umbel-liferous plants show that there were glories of crimson and white not long ago. But at present none but a few dandelions and hawkweeds survive in the hedgerow. It is not the flowers, but the foliage and berries that constitute autumnal glories.

A short distance away, out on the open down, a few bell-flowers, and scabious, and yellow toadflax survive, but more prominent than these are the dead, gaunt thistles that stand up everywhere. It is in the full blaze of summer that the botanist will find his treasures here: they are over and perished now.

The autumn afternoon soon comes to an end. Overhead the wood-pigeons and rooks are flying homewards, the sun is sinking over the distant hills, the mists are rising in the valleys; and the dampness of the grass and the chilliness of the air warn the idler on the gate that it is time for him also to plod his homeward way.

HERBERT E. U. BULL.

PERSEVERANCE REWARDED.

I WRITE the story of a pair of robins. Last winter the little birds seemed to have come to the conclusion that the temperature of a warm house was preferable to the chilly atmosphere outside; they therefore came in the moment a door was opened, and though continually driven out, they generally managed to make themselves comfortable for the night on the curtain poles.

In the early spring, with milder weather, they were less frequently seen, but as nesting-time came, and the doors and windows were more often open, it was found impossible to keep them out of the house. One of them was caught, and in the hope of stopping their familiarity he was sent to an artist friend about a mile distant, who was painting a picture of which a robin formed part. My friend kept the bird several days, but when no longer required he released him, and within a few minutes he was back again in his old quarters.

They then commenced work in earnest. They made their first nest in the servant's bedroom, fixing it between the curtain pole and the wall, and being disturbed they made another on the clothes pegs in the corner. Next they tried to build on the top of a cupboard in another servant's bedroom, then in a work-basket, and they even endeavoured to make a nest in the bed-clothes when turned back daily to air.

They then selected the loop of a door curtain, but as this was objectionable for obvious reasons it was removed, and the cock bird was found next morning standing near the place and looking most disconsolate. After making a nest in a bookcase they finally went back again to the top of the servant's cupboard, and before their presence was detected they had a nest with five eggs, and I need hardly say that their perseverance was rewarded and they were let alone.

But the most curious part of the tale remains to be told. As soon as the eggs were hatched the birds were under the

necessity of going out very early in the morning to get food for their young; but as the window was of course still closed at that early hour, the male (?) bird was in the daily habit of fluttering in the face of the servant till she got up and opened the window.

They brought out and carried off four young ones, and soon after commenced to nest again. But there are objections to birds in a house, and a vigorous endeavour was made to prevent them. Nest after nest was destroyed, and at last, as they were seldom seen, we believed we had been successful in keeping them out; but one day they were traced to the cornice of the window of my photographic room and were found to have made a nest with two eggs in it; yet although they must have been constantly in and out they were rarely seen, and the discovery of the nest was quite accidental. They raised two little birds successfully.

H. P. Hawkes.

OUR AVIARY.

IT is wonderful how much pleasure one may derive from the keeping of even a small aviary. For the great charm of birds lies in their marked individuality: no two are ever quite alike, and half-a-dozen offer infinite variety of habit and disposition. Then, too, the aviary with its circumscribed space gives perhaps more scope to the student of this branch of natural history than a more extended field. Here he may see the birds in all stages of development, from the ugly, shapeless nestling and the ball of fluff in all its newly fledged freshness, to the fully grown songster; while the genuine lover of the feathered tribe will have endless opportunities of observing the flirtations, squabbles, jealousies and reunions which go to make up bird-life.

We began in a small way with one canary, or "green bird," properly speaking, for "Jim" is a mixture of canary and finch. He was exceedingly tame from the first, and would jump at a given signal, shake hands, and come over and over again to have his beak pulled. This was in his gay bachelor days: latterly the cares of a family, and increasing age, have greatly sobered him, but he is still the tamest of all the birds, and the first to come and eat out of one's hand. His moral qualities were, alas, always inferior to his intellectual, greed and jealousy being his besetting sins. As one cage after another was added to the collection, he would visit each in turn during his morning fly and forage for tit-bits, while if one dared to say good morning to any of the others first he would puff himself out with rage, or fly furiously at his own reflection in

the glass—for all the birds were provided with small mirrors, which proved an endless source of amusement to them.

Two unsuccessful attempts were made to provide "Jim" with a mate. The first failed through incompatibility of temper, and "Mrs. Jim" No. 1 was exchanged for a piece of imitation coral for the aquarium, which bore the name of "Lot's wife" in consequence. "Mrs. Jim" No. 2 was weak and sickly, and soon succumbed. "Mrs. Jim" No. 3, being of a submissive nature, has proved a thoroughly congenial mate.

The next addition to the collection was a pair of African "Mannikins," bought in the streets of Paris from a man who carried them on a stick. No doubt they were drugged for the occasion, for they have never been as tame since. They are, in fact, exceedingly disappointing birds, and utterly refuse to respond to any coaxing or blandishments. Bought in the first instance for Japanese birds, they were called "Yum-yum" and "Nanki-po" respectively. When their real nationality was discovered their names were changed to "Prempeh" and "Khama." The latter, however, showing a marked predilection for whisky and water after a chill, and displaying an evil nature generally, had his name changed again to the more appropriate one of "Lobenguela." Two others of the mannikin tribe were purchased—a piebald variety, black, chestnut and white, called "Triple Alliance" or "Trip" for short, and a pretty cinnamon-coloured one with a grey head.

"Trip" immediately struck up a close friendship with the original Africans, and the three would sit for hours huddled up together, perfectly content with each other's society. The grey-headed bird, through no fault of his own, was regarded as a pariah by this exclusive trio, and unmercifully pecked if he dared to approach them. He soon consoled himself by falling deeply in love with "Jim," dogging his footsteps, and earning the name of "the shadow" in consequence. Unfortunately his untiring devotion bored "Jim" extremely, but scolding and pecks had no effect on the phlegmatic mannikin, and he persisted in his attentions till provided with a mate of his own order.

By this time, it should be said, the separate cages had been done away with, and the birds rejoiced in a small aviary consisting of three divisions with a central dome and a revolving tree.

One of the most important, if the least assuming of its inmates has still to be mentioned—"Baloo" the handsome German bullfinch, named after the good-natured bear in the "Jungle Book." Lacking in all "Jim's" brilliant qualities, he more than made up for it by his high pitch of moral excellence. His good nature at times amounted almost to weakness. He would allow "Jim" to devour his last seed, and was even known to let the African Mannikins—a third of his size—turn him out of his cage, in order that they might gaze undisturbed at themselves in his

large mirror. But no sooner were they promoted to the aviary than "Baloo's" sterling qualities made themselves felt, for, though he rarely used his power, he was the only one who could master "Jim," and if he saw him tyrannising too much over the smaller birds, "Baloo" put a stop to it in a summary way. Sad to relate, poor "Baloo" died a sudden and mysterious death, owing, it was supposed, to eating coloured moss. His place was filled by another German bullfinch called "Kaiser." In character, however, he proved to be a sad contrast to his predecessor: his autocratic, not to say domineering, nature soon showed itself, and when he was transferred to another home where he would have more space and open air, his loss was not greatly felt.

The family of canaries, meantime, had been on the increase. After persistent efforts to pluck feathers from the breasts of the other birds, "Mrs. Jim" was at length rewarded with a basket nest and material to fill it. To tell the truth we were not anxious to undertake the responsibility of breeding, having heard that it was a difficult and precarious task. As it happened, however, nothing could have been simpler, and beyond providing them with egg-food, they required no special attention.

"Mrs. Jim," after laying a quantity of eggs, brought out two birds, "Joe," and "Jub-jub" (Johansen and Jubilee). Contrary to our expectations, Jim proved a devoted mate and father, feeding "Mrs. Jim" and the young ones, and watching over the nest with untiring devotion. The other birds did not interfere in any way with the nesting arrangements, and the two young ones grew up into fine healthy birds. When they, in their turn, were about a year old, it was supposed from their nascent trills and attempts at song that they were both cock birds, and a mate was accordingly provided for them, "Nan," or "Nansen," a pale yellow variety. When eventually "Joe" and "Jub-jub" each turned out to be hens, the matrimonial arrangements of the aviary were thrown into serious disorder. Things were righted finally by "Nan" being exchanged for a Hartz mountain bird, remarkable for its sweet song. "Joe" and "Jub-jub" have both reared large families, which have gone to swell the proceeds of various local bazaars.

Owing to the divisions of the aviary, we have sometimes had as many as three nests at once, while from the fact of having been brought up more or less in public, the young birds are never oppressed by the least shyness. It is found necessary to dispose of them as soon as they are able to look after themselves, as they tyrannise unmercifully over their grandfather. "Jim" is no longer as young as he once was, though he still holds his own as the handsomest of the canaries. "Mrs. Jim" is growing old and faded, but she still persists in sitting every spring. "Joe" and "Jub-jub" are still vigorous and lusty, while the Africans continue to lead an isolated and self-satisfied existence at the top of the cage.

A SELBORNIAN.

A TREE FOR THE POULTRY YARD.

THE many foreign conifers introduced of late years into England are generally classed among the *ornamental* trees of the nursery, though I doubt whether any one of them can in this respect compete with our native Scotch Fir, and (soil and situation being favourable) such old-established species as the Norway Spruce and Silver Firs. The first mentioned, when well grown and fully matured, is surely one of the most picturesque of trees.

Away from their native soil and climate and placed under new and perhaps uncongenial conditions, many foreign kinds can hardly be expected to develop their full beauty and individual character. Several species certainly thrive well when young, growing fast and making for a time a brave show; but the effect ultimately produced when maturity is approached cannot surely be compared with that to be obtained by a judicious selection and grouping of old hardy kinds, which have long been inured to our variable and trying climate.

There are of course exceptions, some of the more recently introduced species being both handsome and fairly hardy, and one in particular, *Picea pinsapo*, well deserves a place in the *useful* list.

The conformation and habit of growth of this tree fit it in a peculiar manner for a roosting place for fowls; and the latter so thoroughly appreciate the comfortable quarters provided by it, that they are even apt, by crowding together in excessive numbers on the boughs, to injure the tree by their accumulated droppings. This, however, is easily prevented by planting a proportionate number of trees to the quantity of fowls kept; and I cannot but think that a few of these handsome evergreens would be found very useful on farms where there is a large head of poultry. I doubt whether any other tree affords more warmth and shelter, and is at the same so easy of access to the fowls, the heavier breeds in particular. The numerous horizontal branches, which begin to leave the trunk close to the ground, make the ascent from within an easy matter; and the foliage at the end of the boughs is so very thick and close, that the sleepers are almost completely shut in and hidden from sight in the open space within; in fact, many of these trees, especially when young, might be roughly likened to a large wide hollow cone, with a pole running up the centre, from which horizontal perches radiate in various directions and at different heights.

On parting the boughs and taking a peep at the interior some cold wintry night, the fowls ranged on their perches look very snug and cosy, and the keen outer air, tempered and softened by its passage through the branches, must be far more wholesome for them to breathe than that of a closed-in fowl house.

The common collared turtle or Barbary doves (*Turtur*

risorius) when at large, also seem to be very partial to this tree, and on two farms in this neighbourhood where these pretty birds are allowed their full liberty, this is very noticeable. In a garden about a mile and a-half from the Suffolk coast, there is a fine, handsome specimen of *P. pinsapo*, in which these doves have several times nested and reared their young.

The tree does well in the sands and gravels of East Suffolk, and the finest example I know of in this immediate neighbourhood grows in a poor grey sand.

Baxhall, Suffolk. G. T. Rope.

REVIEWS AND EXCHANGES.

Flora of Skipton and District. Compiled by Lister Rotheray. Skipton: Edmondson & Co. Price 1s. 6d. nett.

The Craven Naturalists' and Scientific Association are to be congratulated on this excellent piece of work compiled on their behalf by Mr. Rotheray, and published by some twenty-six subscribers. It contains less than 150 pages, having none of the preliminary matter now usual in county floras, and giving commendably brief records of localities; but, as it enumerates not only flowering plants but the entire cryptogamic flora of the district from Filices to Mycetozoa and Bacillarieæ (Diatoms), Schizophyta only excepted, it comprises no less than 2,200 species and varieties. The work has been done with great care as to nomenclature, and is clearly and correctly printed, so that altogether it is a very creditable local supplement to Mr. F. A. Lees' *Flora of West Yorkshire*, published nearly twelve years ago. The only points we feel disposed to criticise are the map, which gives no indication of scale, or that the "district" has a radius of thirteen miles, and the unnecessary prominence given to mere book English names by the use of black type, which might preferably have been employed for the scientific names. We hope residents and visitors will support the Association in this bold undertaking.

Report of the Kent and Surrey Committee of the Commons and Footpaths Preservation Society, 1899-1900.

This most satisfactory report of eminently Selhornian work is illustrated with charming views from Ide Hill, Croham Hurst, Marden Park and Brockwell Park. Every member of the Selborne Society in the two counties should support the Committee, whose office is at 1, Great College Street, Westminster.

The Girls' Realm for September contains *inter alia* an attractive article by Mr. Edward Step, F.L.S., entitled "An Hour in a Drang."

Received.—Leaflets on *The Protection of Wild Animals*, *British Blood-Sports: Angling*, *Cruelty at Public Schools*, *The Eton College Beagles*, *The Royal Buckhounds: a record of their sport for the season*, 1898-9, *White Veal* and *The Inland Transit of Cattle*, from the Humanitarian League, *The Victorian Naturalist* for July and August, *The Naturalist*, *The Irish Naturalist*, *Knowledge*, *Science Gossip*, *The Animal World*, *The Animals' Friend*, *Our Animal Friends*, *Humanity* and *The Agricultural Economist* for September.

NATURAL HISTORY NOTES AND QUERIES.

Stoat Stealing Eggs.—An instance came under my notice just recently of how careful a gamekeeper should be before he condemns the jay or the magpie for tampering with the nests of his sacred game birds. A mutual acquaintance missed a nest of sixteen partridge's eggs, and as no human beings had been near the spot the thief was at once put down as the jay or the magpie, but as my friend watched near the nest he saw a stoat run into a hole, and he proceeded to

dig this extraordinary animal out. What was his surprise, therefore, when he found that this was the real culprit, for packed in rows, as if with human hands, over sixty partridges' and pheasants' eggs were exposed to view! Not one single egg was broken, and one only slightly cracked. How were the eggs carried by the stoat to its hiding place without any breakages? Needless to say it was not long before a very valuable addition had been made to the motley collection of the Vermin Pole! W. PERCIVAL WESTELL, M.B.O.U.

5, *Glenferrie Road, St. Albans, Herts,*
August 23, 1900.

Squirrels.—Since I have been established in a home with woodland attached I have engaged the squirrel catchers of the neighbourhood to bring me all the young squirrels they catch instead of sending them to the London market, intending to release them as soon as they are able to take care of themselves, hoping that they would multiply in the woodland around us. But out of ten which I bought last year there was but one female, and of four I have lately had brought me there is only one female, and both have died, one irreconcilable to confinement and the other by a fall, both too young to be released. I have had pairs of squirrels of several species, and in every case the female was the more refractory to familiarisation and mostly proved untamable.

Deepdene, Frimley Green, Surrey. W. J. STILLMAN.

A Good Dog.—A Gordon setter belonging to a friend of mine is most useful in watching chickens. He will allow them to nestle up close to him and to climb over his back as he lies by the side of the hen-coops. All intruders he drives away, and the other day hauled out a large rat from among the crowd of chickens which were feeding from a trough. The rat was devouring the chicken food and apparently in no other way molesting the brood. No one noticed the rat, which was concealed among the chicks, but Rock was of sharper eyes, and made a rush for the culprit and laid him out dead in an instant. This same dog, on the family returning after a temporary absence from home, amused them much by laying a bone on the pillow of each one of them, in token of welcome. He is an amiable animal, except in his dislike for pugs. These he generally attacks, as if they were not proper dogs. In this he is not singular, for pugs are unpopular as a rule among their canine brethren.

Settle, July, 1900. ADDISON CROFTON.

Dogs and Thunderstorms.—I can corroborate Mr. J. Hiam's experience, for a Newfoundland dog in the possession of my father, the late Professor J. S. Henslow, which was never allowed to enter the house, used to hide under a sofa in the drawing-room before there was even any suspicion of a thunderstorm to that less intelligent creature, man!

GEORGE HENSLOW.

The Hedgehog.—There is an idea prevalent in these parts that hedgehogs destroy young pheasants. Is this really a fact? It seems hardly likely from the insectivorous habits of the animal, and perhaps is only an instance of the truth of the proverb, "Give a dog a bad name and hang him," for the superstition about hedgehogs robbing the milk from cows is not yet extinct.

Settle, July, 1900. ADDISON CROFTON.

Cuckoos' Winter Quarters.—In reply to Mr. James Hiam's query concerning "where the cuckoos are found in foreign parts in winter," Mr. R. Bowdler Sharpe, F.L.S., in his most interesting lecture on "The Birds of the Globe," states that "the cuckoo goes right down Africa to the Cape of Good Hope; it also goes into India, and is not uncommon there during the cold season. Some people suppose that it even travels farther, and specimens are said to have been received from the Island of Celebes, in the Moluccas." Mr. Bowdler Sharpe delivered the lecture from which I have quoted in the Hulme Town Hall, Manchester. ALICE A. BRITTEN.

Gorslas Vicarage.

With regard to Mr. Hiam's note and query upon this subject in the September number of NATURE NOTES, the following extracts from recognised authorities may be of service:—

Professor Newton ("Dictionary of Birds") says, "The cuckoo is a summer visitant to the whole of Europe, reaching even far within the arctic circle, and crossing the Mediterranean from its WINTER QUARTERS in Africa."

Mr. Howard Saunders ("Manual of British Birds," second edition), says, ". . . in winter it [the cuckoo] reaches the Philippines, Celebes, Burma, and Ceylon, as well as Natal in Africa."

Dr. R. Bowdler Sharpe ("Handbook to the Birds of Great Britain," vol. ii.), says, "The winter home of the cuckoo extends throughout the African Continent, as it occurs at that season on the Gold Coast, and it is also found in South Africa. Throughout the whole of the Indian Peninsula it likewise extends in winter, and even reaches Australia."

The superficial resemblance of the cuckoo to a hawk no doubt has something to do with the superstition among country folk that the cuckoo turns into a hawk in the winter.

Elm Lodge, Hampstead. BASIL W. MARTIN.

Coal-Tits.—In the course of some improvements in our land this summer a coal-tit's nest in a bank that was partially thrown down was broken up by the carelessness of the labourer and the six young ones scattered on the ground. Being only half fledged and quite helpless, and deserted by the parents, I gathered them up and put them in a cage. One, injured by the violence of the expulsion, was evidently dying, and I gave it chloroform, but the other five ate greedily, and I made for them a paste of the yolk of egg and the seeds of the Italian stone pine, of which I had a quantity provided for my squirrels, and which the wild tits were always in the habit of stealing. I knew that they eat insects, but it was impossible to provide them, as insects are rather rare in this district. They throve after a manner on their diet, though we soon saw that it was not enough, and one after another three died, each in its turn going into a corner of the cage to be worried by the others, and being found dead in the morning. My daughter suggested ants' eggs, and made a search for some, which they took with avidity, and the remaining two grew well and strong rapidly. Later we found that they ate aphides with greediness, and the little green caterpillars which infest the roses and the raspberries, and they are now quite healthy, enjoying the liberty of my study in perfect unity with three young squirrels, which, like the tits, are being trained for liberation when old enough. They are the most delightful pets in feathers, with a restless activity quite unusual in birds, fond of little mischief, always prying into every box and cranny, and their chief delight is pulling my hair or beard, scattering the pins from my pin-box, examining any tiny spot on my hands or face and neck, prying into my type-writer, getting into my drawers and cupboard, and they are especially fond of contesting with me the possession of my pen when I am writing with it, and pulling away the paper I am writing on. They were accustomed to sleep in the cage, and when one got out of the window I took the cage out and offered it, when it got in at once. I have grown so fond of them that I look forward with regret to their becoming fit for complete liberty. Their quick and arch ways, their vivacity and perfect friendliness, and their delicate beauty of colour and form, as well as their fearlessness, make them the most engaging birds I have ever had. The quantity of aphides and other insects and caterpillars they will eat proves them to be of an undeniable value to gardens, though they are accused of eating the young buds of the flower trees, but I should question whether as insect-destroyers they are not likely to be of infinitely greater utility than damage. But that also makes them very difficult to keep as pets, for insect food is not always to be had.

W. J. STILLMAN.

The Nightjar.—Whilst crossing the common near the beach at Hayling Island, on the evening of July 21, I disturbed a large bird that fluttered from a low bush apparently injured, but really to entice me from the spot where two eggs lay on the ground under the bush. The whirr of nightjars had been heard around a clump of trees near the common on previous occasions, but I had not seen one until this evening. Having marked the place, I visited it again in the day-time. During the week following the old bird again fluttered from the bush for a few yards, then rose and flew a short distance, uttering its cry, and settled

on the ground. One egg remained, and a young bird, only to be seen by looking, owing to its colour closely assimilating with its surroundings, sat on a twig under the bush. A few days afterwards there were no traces of either eggs or birds, which I hope (the young ones) were successfully reared.

Although the common is frequented by children, the wiles of the old bird would naturally lead a boy or girl to follow it. I could not but think that this mysterious gift of simulation possessed by some birds is an instance of development according to their needs, a theory held, I think, by Mr. C. Dixon.

During the ages that the nightjar and birds existed on the earth before the advent of man, the defensive tactics against human depredation would not be required. I should be glad to learn if any of your readers have observed this habit in the nightjar. Correspondents of NATURE NOTES in past years, who have written about this bird, do not appear to have noticed it.

New Southgate, W. DENNE.
August 14, 1900.

Greater Spotted Woodpecker.—In a garden near here a greater spotted woodpecker has been caught in a net protecting some cherries. The owners were astonished at the loud cries of this strange gaudy "foreigner," as they thought it. They put it in a cage, fed it with cherries which it ate ravenously, and sent it to Ipswich for identification. It was named, returned, and liberated in its old haunts, and has now taken to attacking the rows of peas.

Market Weston, Thetford, EDMUND THOS. DAUBENY.
August, 1900.

Green Woodpecker.—A keeper, when ferreting on the Euston estate near here, heard a great noise in one of his nets, and found he had caught a green woodpecker which had been driven out of a rabbit hole by the ferret. I have never seen one of these birds go into a hole in the ground, or heard of a similar case.

September, 1900. EDMUND THOS. DAUBENY.

Summer Migrants.—Mr. Hiam's list is very interesting and useful, but by the titlark does he mean the tree or meadow pipit? I presume the former. Why, too, does he include the corn bunting in a list of summer migrants?

The dates of the first appearance of red-backed shrike and turtle dove, *i.e.*, May 24 and June 6, strike me as being exceptionally late. My diary enables me to give the following arrivals, in this district where not stated otherwise: April 1, chiff chaff; 11, swallow; 13, wryneck; 14, a trusty correspondent wrote me that he saw and heard a nightjar near Birmingham on this date; 16, cuckoo; 18, tree pipit; 21, greater whitethroat, lesser whitethroat, nightingale; 22, willow warbler, wheatear; 29, blackcap; May 6, swift; 7, whinchat, house-martin; 13, turtle dove; 29, red-backed shrike. (Note: nest and three eggs found on this date, and male and female birds seen.)

W. PERCIVAL WESTELL, M.B.O.U.
5, *Glenferrie Road, St. Albans, Herts.*

Choked with a Feather.—I picked up a young house-martin a few days ago with a feather from the nest in its mouth and throat, choked and dead. I have put it in spirits. J. HIAM.

House-martin.—In common with both your correspondents, Mr. Collier and Mr. Warner, I have noticed that house-martins and also sand-martins are decreasing. Some three or four years ago both species nested here freely, but this year I have not seen a single nest. The sand-martin has been driven out of his usual breeding quarters by his inveterate enemy *Passer domesticus*. The latest date I have seen any of the *Hirundinidæ* here was a house-martin hawking after insects and very strong on the wing on Sunday, December 11, 1898. Has any reader of NATURE NOTES seen one later?

Penzance, ARTHUR W. SKEAT HARVEY.
September 7, 1900.

Late Nesting.—The continuing fine weather in the West has apparently been appreciated by the birds. On August 10 I found a yellow bunting's nest

(*Emberiza citrinella*) containing four eggs which were quite fresh, and a friend of mine found a woodpigeon's with two eggs, on the 30th of the same month.

Penzance. ARTHUR W. SKEAT HARVEY.

Late Nesting.—On p. 175 "W." remarks that the beginning of July is late for nesting of various birds. Many of the birds breed much later than that. A brood of swallows (the second from the same nest) have now, September 6, lately left their nest. House-martins have, within the past week, hatched second broods, and shells lie about now. Stock-doves are still sitting in my boxes out in the fields. A pair of linnets have a nest near, and I have no doubt are sitting for the third brood. J. HIAM.

Avocet.—One of these beautiful and unfortunately rare waders was shot about a dozen miles from here early this spring. It is a great pity, as possibly its mate was with it, and the pair might have attempted to breed here, and given ornithologists the pleasure of adding, or rather reinstating, its name in the list of British breeding birds.

Penzance. ARTHUR W. SKEAT HARVEY.

Whinchat.—On Friday last I observed a flock of these birds, about a score in number. During the summer the whinchat has not been plentiful here, in fact, the very reverse of it, but stonechats are abundant. It is a well-known fact that where one of these two birds is abundant the other is very scarce. The whinchats which I saw were evidently about to migrate, and were flocking for that purpose. Can any reader in the north tell me whether he has noticed the disappearance of these birds as they make their way south for migration?

Penzance. ARTHUR W. SKEAT HARVEY.

Plague of Blackbirds.—On the very day I read Mr. Hiam's note I came across an extract from a paper in the *Fruit Grower* by Mr. Sampson Morgan, a leading authority on fruit growing, in which he shows that when the birds do eat fruit they are by no means so destructive as the caterpillars they destroy, for whereas the birds eat only the fruit, the caterpillar permanently injures the tree and prevents it yielding afterwards. He says, "We have sat and watched them at their beneficent work, and are satisfied that they destroy millions of caterpillars and grubs and butterflies and moths, and in consequence should be cared for. From the most selfish point of view it is unwise to destroy the fruit-eating birds at any time. . . . If they must be kept away when the ripe fruit tempts them, then that can be done without destroying them, and a few crumbs . . . will do a lot of good." Mr. Witherspoon, a fruit-grower of Chester-le-Street, in a leaflet published by the Society for the Protection of Birds, bears similar testimony. He was trained by his father, a market gardener, to destroy every nest he found, but from observations after a very hard winter which destroyed the birds, he discovered that they were his best friends, and now feeds them in the winter and encourages their breeding near his crops. For six weeks in the year it is necessary to keep blackbirds, &c., moving, or to protect fruit with nets. Mr. Aplin concludes a leaflet on "Birds as Labourers: their Work and Wages" thus:—

"After all, the wages are very small, the work *must* be done: only the birds can do it. *They* will never strike, but do not let us try to 'dock' their well-earned wages or to starve them out in hard times. If we do we may find (when it is too late) that when the land ought to have been cleared of weed seeds and insects, we were short-handed and that the work has been 'scamped.' We may even, in long-continued hard weather, have to give a little out relief, when work and wages alike lie buried under the snow."

L. MARSHALL.

Parrot.—Mr. A. E. Sparrow, of Lea, Gainsborough, writes to record that a parrot that he has had for fifteen years has just laid an egg. We have, we think, heard of similar cases.

Gnapé.—A friend lately returned from Burmah tells me of some Burmese ways of catching and curing fish. On the banks of the rivers are numerous paddy-fields which, at certain times of the year, are flooded knee-deep for the cultivation

of rice. Quantities of fish betake themselves to these paddy-fields, where they are easily caught. Being air-breathers the fish are forced to come to the surface of the water every three or four minutes, and this is taken advantage of by the natives. The fish are driven into a confined space and are prevented from coming up to breathe by rushes, mats, and such like placed on the surface of the water. They then rush through an opening and are caught in a net.

The process of curing is primitive in the extreme. A hole is dug in the ground in which the fish are placed with layers of salt, and are pounded into a mass with heavy pieces of wood. The fish are rarely prepared or cleaned in any way, and are usually consigned to the pit just as they come out of the net, and as the operation is prolonged to suit the catches, a seething, putrid mass, very trying to the olfactory senses of the uninitiated, is the result. Tastes, however, differ, and this form of food is not thought to be good by a Burman till it is "bad." When the curing is complete, the contents of the pit are cut up and sold as gnapé, and become a favourite article of consumption. Any European who has lived in Burmah knows what dorian is, and has wondered at the Burman's fondness for this disgusting fruit. A cargo of dorian up wind is bad enough, but a shipload of gnapé is ten times worse.

Market Weston, Thetford, EDMUND THOS. DAUBENY.
July, 1900.

Idle Bees.—From many sources comes the tale that the supply of honey this year will be disappointing. Bees have been in enforced idleness for a considerable time of their short harvest, numbers of flowers, such as the white clover, on which they much depend, having failed them. In many cases they have made comb which they have been unable to fill with honey. I am told they have a habit of killing their pupæ in times of scarcity, and from several of my hives numbers of dead pupæ have been ejected. When no honey from flowers is to be had, bees fall back upon the saccharine matter, called honey-dew, which different kinds of aphis secrete from their nectaries or cornicles, two tubular organs situated on their back, and peculiar to this group of insects. This honey-dew, so injurious to plants from closing up the pores of their leaves, has also apparently failed the poor bees this year—not a cause for regret, as it makes dark coloured honey of an inferior and nauseous kind. Last spring the plum trees in my garden were infested with aphis, but this most harmful insect was by no means abundant on other trees and plants, even some fir trees, which are usually attacked by an aphis peculiarly attractive to wasps, being nearly exempt. Beans entirely escaped. The wet weather and severe storms have been, and always are, fatal to aphis, while "hoverer" flies, their great enemies, abound. Everything, therefore, seems to have combined this year to force idleness on the proverbially "busy" bee, and those who wish to preserve their lives must attend more carefully than ever to supplying them with artificial food.

Market Weston, Thetford, EDMUND THOS. DAUBENY.
September, 1900.

Bees in a Bedroom.—A few days ago I took out a strong colony of bees and their honey from beneath a bedroom floor. They had been established at least seven years, and had combs and honey reaching about 4 ft. from the entrance and about $1\frac{1}{2}$ ft. wide. About half the comb contained no honey, showing that the season has not been a good one, and that at some previous time it probably contained double the amount of honey. The honey was of superior flavour, from fruit-bloom, and about $\frac{1}{2}$ cwt. I took out and saved the lives of the bees for a bar-framed hive. J. HIAM.

Hornets and Wasps.—The wet and cold at the beginning of August checked the wasps to such an extent that very few have been seen since, although nests were numerous up to that date, and consequently another season very few may be expected on account of young queens not being produced. Hornets have been more numerous this season than usual, although a nest or two have died out from the wet, apparently. I have taken four nests, and they vary much according to position of nest. The last contained about 325, besides the larvæ to hatch out. The nest is a capital specimen and should be preserved for some museum.

Asthwood Bank, Redditch. J. HIAM.

Ivy.—In Mr. Cole's interesting article in your last number, "Nature in Autumn," I find these words, "Here is an oak *throttled with ivy*." In my view a more common or more mischievous error than that ivy destroys or injures the tree against which it leans for support does not prevail. I ask any reader of NATURE NOTES, discarding prejudice, to examine and compare a dozen trees covered with ivy and a dozen trees of the same age without. If any difference, it will be in favour of the ivy-protected tree. Woodmen combine with keepers to destroy all that is beautiful in animate or semi-animate nature, and ruthlessly destroy it, but it is harmless, if not beneficial. It runs straight up, never embracing and "choking" the tree, as the woodbine does. The roots, not being required for support, run straight down, deriving no sustenance from the trunk, as is found by its decay at once it cut at the bottom. No doubt the ivy flourishes best on a dead or dying tree, but that is the *effect*, light and air being *admitted*, not the *cause*.

"Creeping where no life has been,
A rare old plant is the ivy green!"

Nascott House, Watford. GEORGE ROOPER.

Abnormality in Typha.—Mr. A. W. Hudson, of Cranbrook, Kent, records several specimens of *Typha angustifolia*, the reedmace or bulrush, with double spikes of female flowers on the same stalk, the spikes being only slightly united at the base and at the top. Dr. Masters, in his "Vegetable Teratology," only records interrupted spikes in this genus, but we have, we believe, seen branched spikes and specimens like those described by Mr. Hudson.

Abnormal Foxglove.—The specimen described by Mr. Martin is not at all uncommon. Indeed the terminal flower of any kind of spike with normally irregular flowers is apt to become regular, with a multiplicity of petals, &c. It occurs in larkspurs, aconites, horse-chestnut, &c. It may interest Mr. Martin to know that the late M. Henri Vilmorin succeeded in "fixing" the monstrosity in the foxglove, some 90 per cent. of the seed coming true, as he informed me himself.

GEORGE HENSLOW.

SELBORNE SOCIETY NOTICES.

Council Meetings.—The next Council meetings will be held at 20, Hanover Square, on Tuesdays, October 2 and 16, at 5.30 p.m.

Increased Subscriptions.—The Council acknowledges with thanks the receipt of the following subscriptions:—Mrs. Philip Hensley, 7s. 6d., Miss F. Patteson, 10s., and G. B. Milne-Redhead, Esq., 20s.; also 15s.—the subscriptions of the members of the Bedhampton Branch—from the hon. Secretary, Captain F. H. Chippindall Healey; and the same amount from F. W. Headley, Esq., on account of the new junior branch of the Selborne Society at Haileybury College, the Haileybury Natural Science Society having become affiliated to the Society.

FIELD CLUB RAMBLES.

July 28.—A beautiful afternoon and evening favoured this outing to Broxbourne. The party numbered seven, including the leader, Mr. C. Nicholson, and a very pleasant ramble was enjoyed. The route lay through the fields behind Broxbourne Bury, then along the road past Hoddesdon Bury, towards Cowheath Wood; thence west through one of the fine beech avenues which are of such frequent occurrence in this neighbourhood; and so to the "Woodman" inn at Wormley West End, where tea was taken. After this a quiet stroll back to the station, *viâ* the Wormley road and field paths and lanes, to Broxbourne Church, still left time for a detour in the direction of the river.

August 11.—Under the guidance of Mrs. Percy Myles, the "Field Club Ramblers" had a charming walk from Uxbridge to Denham along the banks of the Colne and canal. The drenching rain of the early part of the week helped materially towards the beauty of the ramble, for all the aquatic plants were in the greatest profusion and beauty. The ramblers had tea at the Swan Inn at Denham, one of the few inns still left of the old style. A magnificent *Wistaria* covers the

whole of the front, and had still some lovely blooms: at the spring flowering it is quite a sight to see. The return to Uxbridge was accomplished by about 8.30. The most interesting "finds" were the balsam (*Impatiens biflora*) and the yellow mimulus (*Mimulus Langsdorffii*), while hemp agrimony (*Eupatorium cannabinum*), the willow herbs (*Epilobium hirsutum* and *parviflorum*), forget-me-not (*Myosotis palustris*), fig-wort (*Scrophularia aquatica*), bur-reed (*Sparganium ramosum*) were in the greatest abundance—the forget-me-nots being phenomenally large in the size of their flowers. A beautiful grass (probably *Glyceria aquatica*) was also eagerly gathered; but as there was no "grass" botanist with the ramblers that afternoon, the exact species was not determined.

August 25.—Notwithstanding a heavy thunderstorm which prevailed a short time before the train left Waterloo, a good number of members assembled at Claygate and had a most enjoyable ramble through Oxshott to Stoke d'Abernon, where a visit was paid to the well-known church, and the celebrated monumental brasses, including the oldest in England, were inspected. The guide was Mr. A. B. Wilkinson.

September 1.—Owing to bad weather the ramble was abandoned.

FORTHCOMING FIELD RAMBLE.

Saturday, October 6th.—Fungus Foray in Epping Forest (in conjunction with the Essex Field Club. Head-quarters, the King's Oak Hotel, High Beech, most accessible from Loughton, where guides will be available all day.

ANSWERS TO CORRESPONDENTS.

E. B. B.—(1) Copper Filbert, *Corylus Avellana purpurea*; (2) *Rubus laciniatus*, Willd., an escape from cultivation, of uncertain origin; (3) *Acer campestre*, L., the common Maple.

A. W.—(1) *Scleranthus annuus*; (2) *Artemisia vulgaris*.

Novice.—(1) *Atriplex hastata*, probably; (2) Too dead for recognition; (3) *Lamium purpureum*, Red Dead-nettle; (4) *Euphorbia Helioscopia*, Sun Spurge; (5) *Polygonum Convolvulus*, Black Bindweed; (6) *Epilobium lanceolatum*, a Willow-herb.

C. J. R.—*Gentiana Amarella*.

Arthur A. Kidston.—Your drawing certainly represents a striking case of inosculating branches of a copper beech, but similar cases are not very uncommon. Certainly it is more likely that the connecting branch should have sprung from the lower branch from which it ascends at a normal angle, than from the upper one which it penetrates as if reflexed.

E. H. W. W.—The larva of *Cossus ligniperda*, the Goat moth, a destructive insect, boring into and feeding upon wood, especially willow-wood.

T. M.—μ signifies 1 micromillimetre, *i.e.*, $\frac{1}{1000}$ millimetre, or about $\frac{1}{25000}$ inch.

M. H. M.—*Gentiana Amarella* and *Linum catharticum*.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 131. NOVEMBER, 1900. Vol. XI.

SELBORNIANA.

The Editor's Address.—So many letters continue to reach me wrongly addressed that I feel obliged to remind correspondents that Mr. Britten ceased to edit Nature Notes nearly three years ago, and that he has not lived at West Square, Southwark, for nearly four years!—G. S. Boulger, *Editor*, 34, Argyll Mansions, West Kensington, W.

Selborne Saturday Afternoons.—Mrs. Percy Myles has arranged a varied and interesting programme for the gatherings during this winter, rather more afternoons being undertaken than last year. Among those already settled are visits to Lambeth Palace, by special permission of his Grace the Archbishop of Canterbury, on November 10; to the Botanical Gallery of the Natural History Museum, on December 8; to St. Paul's Cathedral, under the guidance of Canon Scott Holland, on January 12; to St. Bartholomew's, Smithfield, under the leadership of the Rector, the Rev. Sir Borradaile Savory, in February; to the Temple, in March; and to the Royal Botanical Society's Gardens in April. Further particulars appear on the last page of each month's magazine.

Tintern Abbey. — All Selbornians will rejoice that the Government have secured the ruins of Tintern and a considerable area of land adjoining them. This purchase secures, we believe, the most lovely portion of the Wye scenery on both sides of the river.

Windermere Electric Tramway.—We are glad to find that strenuous opposition to this threatened vandalism has not only been aroused but is gathering strength. *The Spectator* for

October 13 has an article on the subject, excellent in intention, but written entirely from the point of view of the literary pilgrim, thus ignoring the plea on behalf of the local residents of limited means which has been brought prominently forward by the advocates of the scheme. If any such demand for facilities of locomotion exists, it would, in our opinion, be amply met by a service of omnibuses, or an ordinary tram line on the existing roads; whilst, if the high gradients arouse a humane feeling against horse traction, a steam tramway would not necessitate the unsightly posts and wires of an electric system.

Ditchling Beacon.—Mr. E. A. Martin writes:—"In your review of Mr. W. H. Hudson's book, "Nature in Downland," you reprint an illustration of the South Downs as seen from Ditchling Hill. The picture shows well the eyesore, or rather series of eyesores, caused by the carrying of telegraph wires up the hill and over Ditchling Beacon. The double posts continue at intervals right up the escarpment, and as one stands in the pretty village of Ditchling, one sees a pair of these objectionable posts projected against the sky-line at the very top of the road that leads up to the Beacon. Some hesitation might surely have been shown before creating the break in the sky-line which these disfigurements produce."

"A Norfolk Rectory."—We have received further correspondence on this article, for which we have not space. One correspondent points out that Gilbert White himself speaks of "amusing" himself "with a gun," but then he was denied the knowledge of the joy of a telescopic camera. Another writer thinks that Mr. Salt's criticisms can be met by the suggestion that rabbits are suitable for food, while missionaries are not usually considered to be so, thus ignoring that gentleman's vegetarian standpoint.

The Royal Buckhounds.—The Prime Minister has consented to receive a deputation on the subject of the Royal Buckhounds, but is as yet unable to fix a date for so doing.

The Catholic Humane League.—We have received from the Hon. Secretary, Mr. R. E. O'Callaghan, 17A, Mandalay Road, Clapham Common, S.W., a prospectus of an association which has been established under this title, with the patronage of the Bishop of Nottingham, the Dowager Lady Knill, and Dr. E. P. S. Counsel, Q.C. The objects of the League are described as "the extension of humane principles among Catholics, in accordance with Catholic instincts and the teaching of the Church; its methods, as "the holding of meetings, . . . giving of lectures, . . . circulation of literature, . . . and especially the giving of illustrated addresses to the children attending Catholic schools." The minimum subscription is 1s. per annum. We need hardly say that we wish

the new League every success, and shall hope to say more as to its work on a future occasion.

Cornish Chough. — Mr. Arthur W. Hext Harvey writes from Penzance :—

"I should like to call the attention of naturalists and all true sportsmen to this bird, which, already sadly diminished in numbers, is now in danger of absolute extermination. At Tintagel, in Cornwall, there are some score or more of these birds left, and these are being shot down whenever an opportunity occurs. If the chough is exterminated, and at present there seems very slight hope of saving it, we shall have the weak policy of the Wild Birds' Preservation Act to blame for it. Under the Act of 1880 the chough is protected from March 1 to August 1, the penalty on conviction being £1, which is less than can be obtained for a 'British' specimen of the bird, so that practically the Act encourages the destruction rather than the preservation of rare birds. Again, the sand grouse, a very occasional visitant, is absolutely protected during the whole year. I have no particular enmity against the sand grouse, but it appears to me to be perfectly absurd to protect a problematical visitant at all times, whilst a rare resident, united as the chough is to us by so many old associations, is allowed barely sufficient time to breed in peace and security.

"There are two ways of preserving this most beautiful bird: (*a*) By procuring an extension of the Wild Birds' Preservation Act to meet the present case; and (*b*) by raising a band of watchers, as has been done with great success at the instigation of Messrs. R. and C. Kearton in the case of the skuas. Of course both methods are expensive, but I think a subscription list started in this and other natural history periodicals would meet with ready response."

The Destruction of Leaves.—Mr. Spencer Pickering, of the Woburn Experimental Fruit Farm, writes as follows to the *Standard*:—"I trust that I may draw attention, through the *Standard*, to the wanton and pernicious destruction of plant-food which goes on all over London at this period of the year. I refer to the burning of fallen leaves. In nearly every square-garden a continuous stream of smoke may now be noticed, rendering the air perceptibly thicker in the vicinity; and even in the public parks, where some intelligence might be expected in the presiding horticultural authorities, the same operation progresses merrily, but on a larger scale, while the trees close by are all the time showing unmistakable signs of wanting the very nourishment of which they are being robbed by the ignorance of their custodians. Every country gardener in the kingdom knows the value of leaf-mould, and learns, in the earliest stages of his education, the simple process by which it may be made, or rather the process by which it may be allowed to make itself, and one would hardly have thought that such a knowledge

is beyond the capacity of his metropolitan brothers. A few prosecutions by the County Council, under the Smoke Abatement Act, would give a salutary impetus to the acquisition of this knowledge, and would save in the aggregate many hundreds of pounds to the dwellers in squares, besides saving many a good tree in our parks from death by starvation."

A MINIKIN MOUSE AND ITS NURSE.

I DO not know whether the following strictly true account of an effort at experimental natural (or unnatural) history will be of any interest to anyone but myself, but at all events I will write it out and give it a chance.

About ten years ago I possessed a pair of canaries that seemed desirous to have a family, so I assisted by providing a breeding-cage, with private boxes, and nest materials, which were properly used. Many eggs were laid, and diligently sat upon; but with no result except making the hen bird look very dilapidated, and I had made up my mind to close the great house, and return the birds to their cottage, when one day happening to look into the area as the dust was being removed, I saw on the flags a tiny mouse in bald babyhood. Being a lover of all kinds of creatures I went and picked the mite up and warmed it well, and when it moved a bit was prompted to drop it into Mrs. Canary's nest. She instantly hopped on to the edge and with many twists of the head made a minute inspection; then she called her husband, who, being both loving and polite, came at once, repeated the inspecting process, and gave his wife a sort of nudge as if persuading her to try, by feeling, what the little stranger was. At first she demurred, seeming to suggest to him "you first," but as he firmly declined, she, like a good wife, obeyed, and got into the nest, being careful not to tread on Mousey, and then settled down as if on an egg. I was rather puzzled at first what to do about the feeding, but decided on putting a small shallow vessel of bread and milk close at hand, often giving a fresh supply. How the bird managed to teach the mouse that it must not expect to take refreshment after the manner of young mice in general my head is not wise enough to explain; but after watching a few times I found the feeding was carried on after this manner. The foster-mother put her beak gently against her nursling's cheek, and soon the ready mouth was turned up, wide open like a young bird's beak, and what was considered "enough-at-a-time" of the bread and milk was dropped down the little red lane. The mouse throve on the treatment, and soon grew fat and strong, and would, I was told by every one who saw the pair, soon devour its nurse. Alas! it did not live to fulfil this prediction, for, I grieve to say, what I thought a little curiosity fell a victim to my own.

I had never been allowed a good view of the baby, as whenever it tried to leave the cradle both Mr. and Mrs. Canary would cry out "Oh! fly not yet," and beat it back to bed with their wings. Being alone one evening I thought I would have a good look, so I lifted the hen off the nest, when to my dismay Mousey jumped out and darted through a hole where a seed-bottle ought to have been, on to the floor and away, before I could see more than that it was become a good sized and active mouse. I searched the room for a long time but to no purpose, and put food about in various parts, which was partly eaten for two nights, but whether by the runaway or its wild relations I cannot say. Of course the little creature had been kept unnaturally warm in its feather bed, and as it was very cold weather I suppose the change caused its death, for a few days later on, the curtains being shaken, down dropped the martyr to mistaken kindness, dead and cold, quite past reviving warmth. I was very sorry for the death of what I think ought to have been a real singing mouse. The birds would accept no apology, and proceeded to pull the nest to pieces in great indignation, and I was left a repentant and lamenting Mrs. Bluebeard.

SELBORNE.

SELBORNE is known to everybody: it is a spot which has long since passed away into the national valhalla as the home and last resting-place of dear old Gilbert White, the clerical naturalist. Its name has been made, not by a man of war, who by one bold stroke on the field of battle became enshrined as a national hero, but by the every-day life, the incomings and the outgoings of a man more obscure and more self-effaced than the most humble member of the clerical profession can be at the present day. But Selborne, the little Hampshire village, is just the place where a man, with the bent of mind of our old friend, would find all that he wished. In a moment of enthusiasm, when his heart was filled with pride at the glories of the place, he penned these lines:—

> See Selborne spread her boldest beauties round,
> The varied valley and the mountain grand,
> Wildly majestic! What of all the pride
> Of flats with loads of ornament supplied?
> Unpleasing, tasteless, impotent expense
> Compared with nature's rude magnificence.

When I visited the spot, a short time ago, it looked so quaint and old-fashioned that I fancied I had stepped out of the rush and hurry of the nineteenth century back into the quietude of our old naturalist's daily life, over a century ago. The classic spot has not as yet been desecrated by the sound of a locomotive, and visitors who would worship at this shrine must either walk or drive the intervening five miles from Alton or Liss, the

nearest railway stations. There is much, however, to occupy your attention on the road. Slowly the beauties of the spot unfold themselves; and, if you are acquainted with the immortal letters, you can pick out the Round House, Norton Farm, and many of the bye-lanes about which White wrote so charmingly. There is none, or very little, of that "varied valley" and "mountain grand" until you reach Selborne itself. Going down the quiet country road I could see Selborne Hill in the distance through the slight haze which hung about. It was one of those glorious afternoons of November when the golden autumn sun bursts out in full splendour, as if trying to stem back the approaching short dark days of winter. Like a huge red ball of fire it hung, rather low down, a little to the north of the Hanger. The slight mist which hung about was scarcely dispelled from the hollows, and over all the country there was that peace and calm so characteristic of the fall of the year. The echo of the church bells from the town of Alton, heard in the distance, added a charm to the scene, and I felt as the good old naturalist, at whose shrine I wished to worship, must have felt, that there is nothing in the world half so inspiring as nature's calm magnificence. There was no noise save the barking of a dog, or the laughter of the children near the farms. A boy carelessly seated on a bare-backed horse, leading a number of others to water at the pond, and a shepherd in a meadow here and there, with his dog, were the only signs of life.

> "All was as peaceful and as still
> As the mist slumbering on yon hill."

The road into the village dips sharply, and as I stood on the top of the slope I could see the cottages scattered among the trees, with the hill for a background. From the chimneys were issuing curling streaks of smoke, which hung like a cloud under the Hanger. Down the hill and across the stream I found myself in the "straggling street." Here was the very place. There was the "Plestor" and the church: there was the house itself in which he lived. In my own mind I could picture the keen student of nature walking leisurely about taking note of everything—of every bird he saw, and every shrub or tree; talking with the villagers and hearing from them all the stories they could tell him about any of nature's creatures. There was not a soul to be seen on the street: the village looked as quiet as it might have been any Sunday during White's time. I admired the handsome sycamore in the "Plestor" which occupies the position held by the "vast oak," and then walked into the churchyard. Here I was struck with the famous yew tree. It was a huge tree when White was alive, but must now be four or five feet larger in circumference than it was when our naturalist measured it about the middle of the last century. It may have furnished bows for the gallant archers in the days of mythical Robin Hood! The old church, with its square tower

and weather vane, had a peculiar fascination. I wondered, as I stood inside and looked up the aisle at the pulpit, what sort of sermons the naturalist preached. They were, doubtless, full of allusions to nature: his similes were, no doubt, drawn from his store of natural history, and all would "lead through nature up to nature's God."* In the centre of the chancel is a slab, and on either side, on the walls, are tablets erected to the memory of relatives of the quiet Gilbert, relatives who fell in foreign lands fighting for their country. Of Gilbert White himself no marble monument speaks out.† His grave is to be found in the churchyard, behind the church. It is marked, like many of the others around, by a head and foot stone with the simple inscription: "G. W., 26 June, 1793." Just such a resting-place as the good old naturalist would have desired! In what more suitable spot could they have placed him? There he lies buried among the scenes he loved, and Selborne, without that quiet and simple grave, would not be the Selborne of Gilbert White. I had a look at "The Wakes," but the house is much altered, and was not the pretentious building it now is when its immortal owner occupied it. The rooms occupied by the old bachelor are still very much what they were, and his sun-dial stands out on the lawn behind. To another classic spot the visitor must go. The hill, with its Hanger, is a conspicuous object in the famous letters. It is a chalk hill three hundred feet high covered with beech, the most lovely of all forest trees. The trees were almost bare, and the hill, as viewed from the street, looked black and weird-looking in the dark shadow thrown out by the departing sun behind. I climbed the Zig-zag, cut, it is said, by our old friend himself and his brothers. It is a winding path to the summit; and it is easy to imagine the old naturalist digging out a path in the slippery chalk that he might climb more easily to his favourite spot. Perhaps it was cut when he began to feel that the fatigue of climbing the hill was too much for him, or perhaps it was that others might enjoy the same pleasures he had so often enjoyed on its summit. There he sat and learned the habits of the woodlark, or the blackbird, or some other of his feathered friends; or gathered specimens of yellow Monotropa or helleborine and the other plants found on its slopes. There were other pilgrims besides myself on the hill enjoying the prospect. I had a look down the glade which White cut in the trees behind "The Wakes." Probably it was from that spot that he obtained the "very engaging view, being an assemblage of hill, dale, woodlands, heath and water."

There was no one about on the "straggling street" when I returned save a boy driving a couple of cows home, which he allowed to walk as leisurely as they might, careful, I thought, not to disturb the serenity of the place. R. A.

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* Those sermons of White's which are extant do not bear out this notion, being simple eighteenth century moral essays.—Ed. *N.N.*

† This is an oversight, as there is a marble slab to White's memory in the chancel.—Ed. *N.N.*

THE LIMA'S NEST.

By H. Wallis Kew, F.Z.S.

AMONG the various uses which bivalve molluscs—Mollusca-Pelecypoda—make of their byssal threads, perhaps the most curious is that resulting in the construction of a nest or case, which, in the comparatively few instances in which the habit obtains, serves as a residence for the builder.

Of structures of this kind found in our own seas, the most perfect are the celebrated nests of Limae, interesting bivalves, which, as Fischer says, "sont tantôt fixés par leur byssus et confinés dans une sorte de nid, tantôt libres et nageant avec une grande rapidité et une allure saccadée, au moyen de battements rapides de leurs valves qui peuvent s'écarter beaucoup plus que celles des autres Pélécypodes."* The present account, merely an attempt to bring together certain scattered information, does not contain anything new.

In certain Limae nest-making is unknown; and some, which occasionally make nests, are generally captured in a free state. Jeffreys relates that he often dredged living Lima elliptica and other species in every stage of growth, and always found them free. Lima loscombii, the same naturalist says, is generally free; but he once dredged an enclosed individual on the Irish coast, and Sars obtained a similar specimen on the coast of Norway. In all probability, as Jeffreys says, the habit depends on the nature of the sea-bottom; when this is of soft mud, the Lima can partly bury itself, and probably does not require further protection. The nest of Lima loscombii observed by Jeffreys was within a valve of the horse-mussel (Modiola modiolus), and was composed of fragments of shells, crabs, and barnacles.†

The really celebrated nesting species is Lima hians: a bivalve of good size, and a creature of exceptional beauty; as maintained by Norman, the thousand delicate and beautifully ringed vermilion tentacles of the mantle, the rich crimson foot, and the snow-white shell form an object unsurpassed for beauty among all our mollusca.‡

Next day, says David Landsborough, was as sweet and lovely as heart could wish. Major Martin had arrived from Ardrossan, and, as he had a dredge of his own, it was arranged that he should go in a boat by himself, and that we should go in another along with Mr. and Miss Alder. This was in 1846, in Lamlash Bay:

The most interesting, though not the rarest thing we got, was *Lima hyans* of continental writers, *Lima tenera* of Turt. I had before this some specimens of

* Fischer, *Manuel de Conchyliologie*, 1887, p. 940.
† Jeffreys, "British Conchology," ii. (1863), pp. 82, 86.
‡ Norman, "Zoologist," xvi. (1858), pp. 5882-3.

this pretty bivalve, and I had admired the beauty and elegance of the shell, but hitherto I had been unacquainted with the life and manners of its inhabitant. Mr. and Miss Alder had got it in the same kind of coral at Rothesay, so that when Miss Alder got a cluster of the coral cohering in a mass, she said, "O, here is the *Lima's* nest!" and breaking it up the Lima was found snug in the middle of it. The coral nest is curiously constructed, and remarkably well fitted to be a safe residence for this beautiful animal. The fragile shell does not nearly cover the mollusc—the most delicate part of it, a beautiful orange fringe-work, being altogether outside of the shell. Had it no extra protection, the half-exposed animal would be a tempting mouthful—quite a *bonne-bouche* to some prowling haddock or whiting; but He who tempers the wind to the shorn lamb teaches this little creature, which He has so elegantly formed, curious arts of self-preservation. It is not contented with hiding itself among the loose coral, for the first rude wave might lay it naked and bare. It becomes a marine mason, and builds a house or nest. It chooses to dwell in a coral grotto. But in constructing this grotto, it shows that it is not merely a mason, but a rope spinner, and a tapestry weaver, and a plasterer. Were it merely a mason it would be no easy matter to cause the polymorphous coral to cohere. Cordage, then, is necessary to bind together the angular fragments of the coral, and this cordage it spins; but it spins it as one of the secrets of the deep. Somehow or another, though it has no hands, it contrives to intertwine this yarn which it has formed among the numerous bits of coral so as firmly to bind a handful of it together. Externally, this habitation is rough, and therefore better fitted to elude or to ward off enemies; but though rough externally, within all is smooth and lubricous, for the fine yarn is woven into a lining of tapestry, and the interstices are filled up with fine slime, so that it is smooth as plaster-work, not unlike the patent Intonaco of my excellent, ingenious friend, Mrs. Marshall. Not being intended, however, like her valuable composition, to keep out damp or to bid defiance to fire, while the intertwining cordage keeps the coral walls together, the fine tapestry mixed with smooth and moist plaster hides all asperities, so that there is nothing to injure the delicate appendages of the enclosed animal. Tapestry, as a covering for walls, was once the proud and costly ornament of royal apartments; but ancient though the art was, I shall answer for it that our little marine artisan took no hint from the Gobelins, nor from the workmen of Arras, nor from those of Athens, nor even from the earliest *tapissiers* of the East. I doubt not, that from the time Noah's Ark rested on the mountain of Ararat, the forefathers of these beautiful little *Limas* have been constructing their coral cottages, and lining them with well-wrought tapestry in the peaceful Bay of Lamlash. *

Further, in 1852:

We would not mention the *Limas*, as these beautiful creatures, and their coral nests, are elsewhere described, were it not that on this occasion we observed, as we did also afterwards, that they do not always keep by one order of architecture. In some places of the lake [Lamlash Bay] we noticed that their habitations were not formed of the millepore coral, but of fragments of shells. Whether this was owing to a scarcity of coral as building material in their neighbourhood, or whether it was owing to diversity of taste, we cannot say, but certainly one would not have supposed, on looking at their workmanship, that the coral-masons and the shell-masons were children of the same family, which, nevertheless, they seem to be. We never saw birds of the same species differing so much in the fabric and structure of their nests. The coral nests and the shell nests differed as much in fabric and form as the nests of the mavis and magpie. The coral nest was comparatively smooth without, and, like the nest of the mavis, plastered within. The shell nest was unplastered within, and outside it was almost as rugged, and as well protected by sharp processes, as the nest of the magpie, with its impregnable fortification of thorns. The shell nest, about the size of a man's hand, was a rugged mass of sharp-pointed fragments of broken shells, bound tightly together by almost unseen cordage of byssus. The inex-

* Landsborough, "Excursions to Arran with reference to the Natural History of the Island," 1847, pp. 319-321.

perienced dredger would cast it from him into the sea, little suspecting that an unseemly mass of broken shells, to all appearance fastened together by chance, was the well-constructed lurking-place of so beautiful an animal. He would not suppose that there could be a habitable cave within; and would a creature, he might say, build a house without *ish* and *entry?* On closer examination, however, it is found that this pagoda-looking building is really the habitation of the beautiful *Lima*—that the shells, though piled up, one might think, regardless of rule, are so arranged as to leave a snug receptacle in the centre for the ingenious architect, to which, by a concealed door, he can enter, and by which, if so inclined, he can issue out. Very wonderful are the works of God, and kindly does He teach even the feeblest of His creatures to consult for their own safety and welfare! *

Landsborough adds that when taken out of the nest the animal swims about with vigour, after the fashion of a Pecten; it opens its valves, and, suddenly shutting them, expels the water, so that it is impelled onwards and upwards, and when the impulse thus given is spent, it repeats the operation, and thus moves by a succession of jumps.

The information given by Forbes and Hanley (1853) is that Lima hians, which is often free, can spin a compact nest of byssal threads entangling small stones, shells and fragments of nullipore; in the midst of which the animal nests on a smooth inner coating of fibres.†

In 1858, Norman pointed out that—though he had found Lima hians free in rock pools at Herm—in the Clyde district it appeared always to inhabit a nest; the few individuals found free in the latter locality being probably those whose nests have been broken by the dredge; or possibly, Norman thinks, those which have temporarily quitted their domicile. The nest, according to this observer, is frequently 8 to 10 inches, or perhaps a foot in length. It is formed of nullipore, stones, shells and seaweeds, strongly fastened together by byssal threads; the interior is lined with a thick network of similar threads, the interstices being filled up with slime so that it forms a smooth tube. Individuals of all sizes are found separately encased in nests of their own.‡

According to communications to Jeffreys (1863) by David Robertson, this Lima is by no means particular as to the kind of material it uses. In Arran, Robertson found the nests among muddy roots of Phyllophora rubens without the addition of any harder substance; at Rothesay they were made of small gravel; and in Cumbrae of thick matted clusters of nullipore. The structure, it is added, is not analogous to the nests of birds, &c., for it is not a receptacle for eggs or young. Jeffreys states that at Herm, where Norman found the creature free, R. N. Dennis observed more than a hundred of all ages, but mostly young, enclosed in nests. These nests were generally fixed under

* Landsborough, "Excursions to Arran, Ailsa Craig, and the two Cumbraes," 1852, pp. 54-5.

† Forbes and Hanley, "British Mollusca," ii. (1853), p. 271.

‡ Norman, *l. c.*

stones at low water mark; they were broken in turning over the stones, and the Limae swarm off in all directions. The larger individuals were always alone in the nest; but, according to Dennis, this was not the case with the young, of which he found, he believed, as many as seven in one nest.* It is probable, however, that there is some mistake here; the explanation being, possibly, that several young flushed from the same stone, and supposed to come from a common nest, came in reality from as many small, perhaps ill-defined nests.

In 1865, Lacaze-Duthiers examined nests of the same Lima at Port Mahon, Minorca; and his description is accompanied by a figure on which the illustration found in the natural history books is based. Shells of Trochus, of Lima itself, algæ, fragments of wood and coarse gravel are fastened together, the observer says, by numerous filaments resembling strands of tow; and the whole forms a mass, more or less spheroid, with a very variable, sometimes scarcely visible, orifice. The creature evidently uses, more or less indiscriminately, the various objects which happen to lie near; sometimes big fragments of stone were attached to delicate fragments of alga, and so forth; internally there was always a lining of threads. The structures were found in plenty, usually beneath large flat stones, but it was evident from some of the specimens that they were not necessarily adherent to large foreign bodies.†

Finally, in 1895, Robertson (whose communications to Jeffreys in 1863 have already been noted) returned to the subject of Lima hians.‡ Recalling his long experience of the animals' nesting habits in the Firth of Clyde, this naturalist says that where nullipore is plentiful the creatures build freely with that material; if such is not to be had, shells, stones and other *débris* are used, and though usually preferring small objects, the animals sometimes contrive, in want of more suitable material, to use shells over 2½ inches long, and nearly as broad; in other cases, when hard materials are not obtainable, soft filamentous algæ are utilised. Hundreds of nests had been examined, but the author had never found more than one Lima, old or young, in the same nest; except in torn ones, into which two or three may sometimes get by accident. This animal, like most of her kind, sends adrift her thousands of ova into the open sea, and by the time the young have attained a size of little more than a quarter of an inch, they build their own separate nests. Robertson's principal object was to record an apparently new depar-

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* Jeffreys, *tom. cit.*, pp. 90-2.

† Lacaze-Duthiers, *Description du gîte des Limes*, *Annales des Sciences Naturelles*, *Zool.* (5), iv. (1865), pp. 347-52.

‡ David Robertson, LL.D., the celebrated naturalist of Cumbrae (*b.* 1806, *d.* 1896), read papers on Lima hians to the Natural History Society of Glasgow in 1859, and again, as now quoted, in 1895 (*Proc. and Trans. Nat. Hist. Soc.*, Glasgow, n. s., iv. 1897, pp. 331-2); the writer is not aware that the former paper was printed.

ture in the creature's nest-making habits; he had recently found (for the first time after many years' dredging) three individuals on different parts of a frond of Laminaria saccharina, with the edge of the frond tucked over them, firmly tied down by the byssus into a very secure shelter. The adoption of the frond was the more remarkable from the fact that it was lying over a bank of nullipore, the Lima's favourite building material: "it may be a question whether the animals have the power to draw the edges of the bulky frond over themselves, or whether it is an irritation caused to the frond by the Limas, giving it a tendency to fold over—most likely the latter—as it is usual to find the fronds of sea-weeds and leaves of land plants crumpled over the lodgment of the infesting animals. On the other hand, the large shells and stones they use in making their nests, and the difficult position they are sometimes placed in, give support to the possibility that they can bend the frond to serve their own wants."*

Robertson found that a gelatinous polychæte worm, perhaps a Siphonostoma, almost invariably occurred in the nest with the Lima; another polychæte, Flemingia plumosa, and a small porcelain-crab (Porcellana longicornis) were also frequently found in the nests; and besides the crab and the worms, Robertson took, from among the fibres of the nest, a curious minute Isopod, Munna whiteana, Bate and Westwood.† According to Balfour, the slime with which the nest is lined is rich in Diatomaceæ, its examination repaying the naturalist interested in those organisms.‡

As regards the habits of Lima hians in the aquarium, Robertson, who frequently kept individuals for many months, found that they built freely during captivity. One, which was in good health at the time of writing (January, 1863) was taken from the sea in May, 1862; it commenced building a day or two after it was put into the tank, and had since lived under its own roof, adding from time to time to the size of the oblong nest. The creatures appeared to live longer when supplied with building material, but failing such they frequently made nests of their own byssus.§ One, for instance, confined without materials in a glass jar, built its nest wholly of byssal-threads, in the angle between the sides and bottom of the vessel. Nests built under the latter conditions, according to Gilchrist, have the appearance of an ingenious lattice-work. One Lima kept by M'Crie increased the size of its nest by building a sort of awning, wholly of threads. It is noted further that the creatures will build with objects with

* Robertson, 1897, *l. c.*

† Robertson, in Jeffreys, *tom. cit.*, p. 92; Stebbing, Naturalist of Cumbrae, 1891, pp. 176-7; Bate and Westwood, British sessile-eyed crustacea, ii. (1868), p. 330; Benham, Camb. Nat. His., ii. (1896), p. 298: "*Siphonostoma* is found in the 'nests' made by the mollusc *Lima*."

‡ Norman, *l. c.* § Robertson, in Jeffreys, *l. c.* ‖ Robertson, 1897, *l. c.*

which they are unaccustomed; almost any material will do; and it is said that Mrs. Robertson induced an individual to construct a beautiful nest of glass beads.*

The writer has not seen any complete account of the manner in which the building is carried on. Lacaze-Duthiers (who did not see the animal at work) alludes to the detachment of threads from the foot of a mussel (when travelling) as probably giving a clue to the methods of Lima; and notwithstanding the opinion of v. Martens that the circumstance referred to "has scarcely any bearing on the question how Lima procures separate pieces of thread to tie together a quantity of loose objects,"† it certainly seems to the writer that the suggestion is of value. The idea is that the Lima, having attached its thread, for instance, to a fragment of alga, to a stone, and to a shell, then detaches the thread from its foot, as the mussel detaches its temporary byssus. By a repetition of the process, the objects thus united would in turn be attached to others united in a similar way, and thus the nest would be built up, the lining of threads being subsequently fixed and detached from the foot in the same manner.‡ Gilchrist states that the animal may occasionally be observed "to apply the tip of the foot for a short time to some object lying near, and when it is drawn off a fine thread will be observed to have become attached, and thereafter spun out to be fixed somewhere else in the burrow;" and, by constant repetition of this process, "the burrow is at last lined with a sort of feltwork, and the parts are bound so closely together as to require some force to pull them apart." When the nest is closely examined, according to this author, some kind of assorting is evident in the disposition of the twisted and branched nullipore of which it is commonly formed; and it is supposed that the tentacles of the mantle may play a part in this work, helping the foot in the arrangement of the materials.§ The animal's activity when released from its nest raises the question whether, in the ordinary course of nature, the creature is permanently immured, or whether it comes out from time to time for a swim in the open sea. The latter condition, as we have seen, is contemplated by more than one writer. Landsborough speaks of a "concealed door" by which, if so inclined, the animal can issue out. Lacaze-Duthiers says that the orifice, though often small, is perhaps sufficient for the egress of the animal; he evidently thinks it improbable, however, that it is thus used; and the present writer gathers that in all probability the Lima's residence in its nest is, generally speaking, of a permanent nature. When pressed by an enemy, by which the nest may or may not be torn, the Lima no doubt attempts

* Gilchrist, *Proc. and Trans. Nat. His. Soc., Glasgow* (n. s.), iv. (1897), pp. 218-25.

† v. Martens, "Zoological Record," 1865, p. 296.

‡ Lacaze-Duthiers, *l. c.* § Gilchrist, *l. c.*

to escape by coming out and swimming away; the creature's behaviour when disturbed by the naturalist clearly suggest this,* and in other circumstances, possibly, the creature may occasionally abandon its home. We know something of a faculty of "homing" in molluscs of another class, but it seems improbable that the Lima, having once gone out, ever finds its way back; more likely when it settles down again it does so in another place, and there sets about the building of a new domicile.

Among other nest-making bivalves are some of the family of mussels (Mytilidæ), a few of which are found in nests, or cases, more or less similar to those of Lima. The young of the horse-mussel (Modiola modiolus), and those of the prettily painted Modiola adriatica, often fasten together small stones, &c., and thus make rude nests.† The little Modiola phaseolina does the same, as also do several species of Modiolaria.‡ Modiolaria discors, according to Alder, "forms for itself a kind of nest or case by stitching together the small sea-weeds or corallines with its byssal threads;"§ and according to Forbes and Hanley,|| it has occurred in the Irish Sea, in nests of fragments of sea-mat (Flustra foliacea) and masses of sand agglutinated together and combined by byssal threads.

REVIEWS AND EXCHANGES.

One Thousand Objects for the Microscope, with a few hints on Mounting. By M. C. Cooke, M.A., LL.D., A.L.S. With five hundred figures. Warne & Co. Price 2s. 6d.

THIS is practically a new work under an old name, for the veteran naturalist, to whom we all owe so much, has prefixed an introductory part, amounting to a third of the entire book, in which he gives just those instructions as to the choice of an instrument and its accessories, as to collecting and mounting, that the beginner in microscopy requires. The result is a book which is, so far as we know, without an equal for the purpose.

Skertchly's Geology. Revised by James Monckman, D.Sc. Tenth edition. Thomas Murby. Price 1s. 6d.

This so-called edition is practically a reprint, even the misprints of the edition published two years ago being reproduced. The book itself is, as we said then, an excellent one.

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* When nests are put into water and broken up, Gilchrist writes, "the animals may be observed flopping off in a jerky manner, a habit admirably adapted to escape seizure by any too confident fish, so sudden and unexpected is each contraction by which the animal darts away."

† Jeffreys, *tom. cit.*, pp. 113, 117; Duprey, "Ann. and Mag. Nat. Hist." (4), xviii. (1876), p. 339.

‡ Jeffreys, *tom. cit.*, pp. 120-1.

§ Alder, *Trans. Tyneside Nat. Field Club*, i. (1850), p. 175.

|| Forbes and Hanley, *tom. cit.*, pp. 197-8.

The South-Eastern Naturalist, being the Transactions of the South-Eastern Union of Scientific Societies for 1900. Archer & Co., 35, Avondale Square, S.E. Price to non-members, 2s.

The South-Eastern Union is to be congratulated on having secured the reversion of the name best fitted for their Transactions, on having a new editor in Mr. Tutt, to relieve the pressure of work upon the secretary, Dr. Abbot, and on having published an interesting record of another good year's work. The most obvious need of the Union is a greater number of subscribing members, in addition to the delegates of affiliated societies. In addition to many papers of varied interest to naturalists. this annual volume contains one directly Selbornian, on "The Protection of Wild Birds in the South-Eastern Counties," by J. H. Allchin, Bentlif Curator of the Maidstone Museum.

The National Home-reading Union Magazine. Vol. xii., No. 1, October 8, 1900.

Some of the younger members of the Selborne Society may be glad to be told of the existence of this Union and its magazine, now in their twelfth year. If gush does seem sometimes to predominate over reason, it is better than an absence of enthusiasm, and Richard Jefferies's books, though never meant to instruct the mind, are certainly as full of wholesome guidance for the emotions and observing faculties as any that could have been chosen for home reading in Nature-study. The whole list of books recommended affords a most valuable guide, and can be obtained by any seeking direction in their reading, from the Secretary, Surrey House, Victoria Embankment, W.C.

North American Fauna, No. 18: *Revision of the Pocket Mice of the genus Perognathus.* By Wilfred H. Osgood, United States Department of Agriculture.

This is another of those valuable conspectuses for which we have of late been indebted to the United States Department of Agriculture. In sixty-three pages we have descriptions of over thirty species, besides sub-species, accompanied by two plates of skulls, and two maps showing geographical distribution. Whilst fully recognising the systematic completeness of the work, we cannot help wishing, from the point of view of general zoology, that the craniology may be supplemented by some general osteology and myology.

Food of the Bobolink, Blackbirds, and Grackles. By F. E. L. Beal, B.S., Bulletin No 13, United States Department of Agriculture.

This is a report based on the examination of the contents of the stomachs of over 4,800 birds, belonging to nine American species. Though the ravages of the bobolink (*Dolichonyx oryzivorus*) in the rice fields of the Southern States are recorded in its name, and those of the "blackbirds" in the cornfields of the Upper Mississippi are also only too well known, the quantity of injurious insects consumed by several of these species fully compensates for the grain they destroy. The birds themselves are figured, and full diagrams given, showing the proportion of the various articles of food to each other in the case of each species; so that, if it helps to secure a more just discrimination among farmers between their friends and their foes, the sacrifice of this somewhat appalling list of birds may be excused.

Received:—*Board of Agriculture Leaflets, Nos.* 64, 65 *and* 66, on White Root Rot on fruit trees (*Rosellinia necatrix*), the Small Ermine Moths (*Hyponomeuta*), and the Workmen's Compensation Act, 1900, respectively; *Annaes de Sciencias Naturaes*, vol. vi., Oporto; *The Victorian Naturalist* for September; and *Knowledge, Science Gossip, The Naturalist, The Irish Naturalist, The Animals' Friend, The Animal World, Our Animal Friends*, and *Humanity* for October.

NATURAL HISTORY NOTES AND QUERIES.

Red Deer.—There are dodges in most trades, and the following may not be generally known. A friend of mine had a conversation lately with the keeper of a park in England where there is a large herd of red deer. The keeper told him he had to keep a sharp eye on the horns when they were shed, or the deer would soon, according to their habit, gnaw and spoil them; for he collected them, and sent them to a brother keeper of a forest in Scotland. On being asked what the Scotchman did with them, he replied that he was not too curious in his enquiries, and he paid him well; but he believed "*he fastened the horns on the heads of the hinds* he shot, and sold them to the public!!"

October, 1900. EDMUND THOMAS DAUBENY.

A Good Dog.—Mr. Addison Crofton's account of a Gordon setter allowing chickens to nestle up close to him and play with him, reminds me of a very striking illustration of a similar nature which I saw last Easter. Lord Clarendon's head keeper—a sensible, intelligent "keeper," by the way—had several young black retrievers, and in a small outhouse I was surprised to see all huddled up together, three or four puppies, the mother, a sitting hen and some chickens! My only regret is that I had not a camera with me so as to preserve such a picture! W. PERCIVAL WESTELL, M.B.O.U.

5, *Glenferrie Road, St. Albans, Herts.*

October 6, 1900.

How Rats carry Eggs.—A year or so ago there was a discussion in NATURE NOTES as to how rats carry eggs, but no satisfactory explanation was forthcoming. In the October number of the present year, Mr. Percival Westell, after describing a great find of pheasants' and partridges' eggs in a stoats' hole, again asks, how were the eggs carried by the stoat. I have always been of opinion they were carried in the mouth, and the following appears to corroborate this idea: Last year, in an osier bed, on the Thames, I noticed a moorhen's egg lying at the mouth of a hole, apparently a rat's hole. On carefully examining the egg, I found, about half an inch from the small end, two minute punctures nearly an inch apart, whilst on the opposite side and near the large end, was a small third puncture, all such as might be caused by the teeth of a small animal. The remarkable point, however, about these punctures was, that though they pierced the shell they did not pierce the inner membrane, or lining of the shell, which prevented the contents from running to waste or going bad—at all events, for a time. If Mr. Westell has preserved any of the eggs discovered in the stoats' hole, it would be interesting to hear whether he can discover any indications of holes in the shells which would bear out the foregoing observation; also whether the holes correspond with the dentition of a stoat.

7, *South Parade, Bedford Park, W.* ROBERT H. READ, M.B.O.U.

Hedgehogs.—Friend as I am to the hedgehog, it is impossible to deny that he will take a young pheasant, partridge or rabbit, when opportunity serves. An acquaintance of mine had a rabbit earth in front of his windows, where one spring no young rabbits were to be seen. He watched to ascertain the cause, and at last shot a hedgehog as it came out of a hole. After this young rabbits appeared as usual. In captivity hedgehogs will eat anything. I have kept them for months on bones and scraps from the plates. In spite of his weaknesses the hedgehog is a most useful animal, his usual diet being worms, slugs, grubs, caterpillars, beetles and such like. He therefore deserves considerate treatment.

Market Weston, Thetford. EDMUND THOMAS DAUBENY.

October, 1900.

Your correspondent's query as to whether it is really a fact that hedgehogs destroy young pheasants, has engaged my attention this summer, because on a gamekeeper's vermin pole I had seen several of these curious and interesting animals. The result of my enquiries amongst practical and sensible keepers is unfortunately not in the animal's favour. It does get into pheasants' nests and destroys the eggs and young, and although it is the aim of my life to do all I can to show the good these wild creatures do, when one finds out for certain what harm is perpetrated it is only right that such should be put on record.

I have, therefore, answered Mr. Crofton's question, but please allow me to add, that notwithstanding the fact of the animal destroying these precious pheasants' eggs and young, there is no doubt it does much more good than harm.

October 6, 1900. W. PERCIVAL WESTELL, M.B.O.U.

I cannot prove that hedgehogs eat young pheasants, but I know they eat young chickens, having caught Mr. Prickles in the act, as related in *A Mendip Valley*.

Winscombe, Somerset. THEODORE COMPTON.

A Plague of Blackbirds.—In your September issue, under the above title you print a complaint from a correspondent. In it he speaks of the loss of fruit caused by the depredations of blackbirds and thrushes, and lays the blame upon the "Protection" Act. He may be right in so doing, but may I suggest what I believe to be a remedy. As an amateur gardener I, like Mr. Hiam, have lost fruit, bush fruit especially, and in a smaller degree pears and plums, and have given some thought to the problem how to save them. This year I think I have found its solution. I always noticed that the fruit disappeared most in hot, dry weather, and I thought whether *thirst* on the part of the birds may not have had something to do with it. So this spring, very early, I constructed an artificial pond some four feet deep and twelve or thirteen feet in circumference, composed of cemented brick-clinkers, and covered the sides (it is raised two feet from the ground) with periwinkle and creeping plants. I filled it with fresh water, and introduced a good variety of pond life and pond weeds in order to keep it fresh. It was scarcely finished before it began to be appreciated by the plentiful bird-life of the neighbourhood. It is situated opposite my summer-house door, and sitting there on warm afternoons, actually hundreds come (in twos and threes at a time) to drink in the course of two or three hours. There is no water that I am aware of (for I live on a hillside) nearer than the river, half a mile away, so possibly many of my visitors come from some distance. But what about the fruit? Well, I think I may say I have lost *little* or *none*. I never before had so little trouble with birds. So my contention that thirst is to a great extent the cause of fruit destruction *seems* to be correct.

I may say that I add four or five gallons of water daily in hot weather to allow for evaporation and consumption. I propose erecting a second pond or basin next year in another spot in my half-acre garden. Will Mr. Hiam try the experiment and communicate the results after a season's experience?

Ivy Lodge, Bishop's Stortford, Herts. W. B. GERISH.

Remarkably tame Robins.—While visiting the home of friends at Pontrhydyrun, Monmouthshire, in the summer, I had the pleasure of seeing, I might *almost* say, of handling, some of the tamest robins I have ever seen or heard of. I think it has been recorded in NATURE NOTES that robins have come near and even on, the tea table of a garden party, but these robins went much further, or rather, came much nearer than that. While I was sitting one day on a rustic bench under a laurel bush, I felt something tapping on my boot, and there was "Bobby" close to my foot, looking up and almost asking for his dinner. I tried several times to induce him to take crumbs from my hand, but though I did not succeed in this, he frequently took them from the seat when I was sitting there, within six inches of my hand, before he moved away. One day he attacked the gardener's pudding plate, when the latter was having his dinner on the seat. I was told that the previous year some very young robins sometimes took crumbs from the inside of the ladies' umbrellas held upside down, and also from their shoes over which the crumbs were sprinkled. It is possible that this grown up robin was one of these, whose memory carried him back to the feeding ground of younger days. If so, it would perhaps partly explain the tapping on my boot. Under such circumstances, who would want a bird in a cage? You may have them as near to you, and also much tamer than many small birds pent up in a cage: they are much more interesting in their natural state: they need no attention, and give no trouble: you may have them almost wherever you want them, by calling, or even without: they sing within two feet of your head: they follow you from tree to tree as you walk round the garden: they fly across your path, almost brushing you with their wings: they hop across your feet; and last, though

by no means least, they are most useful in helping to keep down the multitudes of insects, which, were there no birds, would soon become as a plague.

In this particular garden there were several families of robins, and as in the case of the robin both birds sing, the hen being the better singer of the two, which is, I suppose, unique among birds, their song at dusk, from one part of the garden or the other, was sometimes almost continuous. I suppose few are aware that in the song of the robin may be clearly detected the notes of many of our best known smaller song birds, the reproduction being often so clever as to deceive even the most experienced ear.

I was asked a short time ago if hen robins had red breasts. I always understood they had, but I could not feel absolutely positive about the matter. I believe no robins have red breasts until they arrive at a certain age.

C. E. C.

Late Nesting.—A pair of swallows (or martins) were observed feeding young ones in a nest built under the eaves of a farm building on September 18.

W.

Habits of Nightjar.—The nightjar is quite an adept at playing the trick described by Mr. W. Denne. I have noticed it for many years. In July of the present year my son flushed a nightjar on Westcott Gore, Surrey. She got up as though with difficulty, skimming the bracken-tops with the right wing held as though broken, and inviting us to go in pursuit. I immediately looked around among the heather for her nesting-place, and there at our feet were two newly-hatched balls of grey down, and the still moist egg-shells. I visited them every day for about a fortnight to mark their progress in life, and every day the mother flew off with precisely the same tactics, to the branches of a particular oak-tree on the edge of a wood, whence she hurled a volume of uncomplimentary remarks at me. On the tenth day my daughter reported that the birds had disappeared, and I found they had removed to a clear spot among the heather about a couple of yards away, the original site having probably become stale. The young ones remained as still as stones, but on taking them up to examine their plumage they hissed vigorously. They were then (August 1) fully fledged, though a little down and the sheaths of the dorsal feathers still remained. They stretched their long wings and flew, one about thirty yards away, the other at least sixty yards, to the young oaks where the mother-bird was sitting.

Harlesden, N.W. EDWARD STEP, F.L.S.
Oct. 5, 1900.

Insect-eating Birds.—I wish to feed blackbirds, thrushes, and other insect-eating birds on my lawn during the winter. Could you tell me what would be the most suitable food? C. B.

[Bread, not sopped, wheat, cracked maize, split marrow-bones, cocoa-nuts, which may well be afterwards filled with suet, hemp seed, sunflower fruits, and pans of water. It is said that suet put on the under side of large boughs inclined about 45° will be safe from sparrows.—ED. *N.N.*]

Summer Migrants.—In reply to Mr. Westell on p. 196, he is quite right in presuming that I mean the titlark as the tree-pipit. The meadow-pipit only visits the locality from September until April, and until within a few years since I considered it a winter migrant; but on visiting Sutton Park, near Birmingham, with a friend some five or six years ago, I found them very common, with nests, eggs, and young, by the side of the ditches among the rushes.

The corn-bunting, or brown-bunting, I never see in winter, and it is a very rare visitor here in the summer, therefore I included it with my list of summer migrants. I heard two chiff-chaffs on September 26, and am informed that a cuckoo was seen on the telegraph wires on September 27.

JAMES HIAM.

Parroquets.—Early one beautiful morning last week, while resting on a seat in Hampstead Lane, I noticed some starlings accompanied by two larger birds with long tails and making a loud chattering, flying from the wood across the road to one of the fruit trees in Caen Wood Towers Garden, and was at a loss to know what birds they were. Yesterday, when returning from the same

direction, I saw apparently the same pair flying from the grounds of Sir Maryon Wilson's house to a tree on the Heath, and was so close to them as to be able to distinguish that they were of a light green colour, with small heads and hook-bills. Seeing a constable close by I enquired if he had noticed them and he said he had seen one of them before, last winter, in Gainsborough Gardens. Is it possible for these birds to breed and survive a winter in this climate?

3, *Mount Vernon, Hampstead, N.W.* S. G. EDWARDS.
October 3, 1900.

Butterflies and Birch-Sap.—Last August my son and I spent a fortnight at Goslar, in the Harz Mountains, a quaint old city which was once the residence of the Hohenstaufen emperors. The adjoining mountains are covered with pines. There is very scanty animal life. One day we saw some butterflies fluttering around a tree in one of the glades and went up to examine it. It proved to be a birch, the sap of which had exuded abundantly, and had apparently undergone fermentation. On the stem, and on the rocks or grass around were scores and even hundreds of gorgeous butterflies, gloriously drunk, so that they could be easily picked up by the hand. Peacocks were the most numerous—say about 150; next came the Red Admirals, some fifty or sixty; lastly, of Camberwell Beauties there were twenty or thirty, with a few wasps. I saw no white, or others of the more common kinds.

Now the spot was two or three miles from the town, two from the open country. Except heather, the forest contained hardly any flowers. The Camberwell Beauty flies about among the pines, but the Peacocks and Red Admirals must have been attracted from a considerable distance.

We visited the tree on several occasions, always finding the same state of things exactly. None but the species above seemed to take part in the debauch. The large Venus Fritillary was plentiful in the neighbourhood, but I do not remember seeing one in the company. We noticed a similar phenomenon elsewhere, with a young birch-tree which had exuded a small quantity of sap, and so had one or two butterflies fluttering about it.

I should be glad to know if this has been previously noticed. If not, a knowledge of the fact would be useful to the collector.

6, *Gloucester Place, W.* HERBERT SNOW, M.D.

Spiders.—I should be so much obliged if you or your readers could advise me as to how to exterminate spiders. I have lately built a room which is practically almost lined with Spanish chestnut wood, but even that seems of no avail.

Homeclose, Alresford.

[The notion that certain roofs exempt from spiders are of chestnut wood is unfounded. Such roofs in England invariably prove, on examination, to be oak. —ED. *N.N.*]

Ivy injurious to Trees.—I was very interested in Mr. Rooper's notes hereon in the October issue. Cannot someone let us know whether ivy growing on, or up, or round, trees, does do them harm, and if not we can make an effort to induce landowners to stay their hands in this direction.

October 6, 1900. W. PERCIVAL WESTELL, M.B.O.U.

[One of the best authorities on the dangers of woodlands, Dr. Fürst of Aschaffenburg, in his edition of Kauschinger's *Lehre von Waldschutz* (1889), merely says of ivy that it is "no parasite, for it derives all its nourishment from the soil, and all the rootlets appearing on stems and branches are merely supporting rootlets." We seldom or never see horizontal branches of ivy embrace a stem, nor does it become embedded in and distort the tree as honeysuckle distorts hazel; so that on the whole, I think that the war waged upon it is largely prejudice.—ED. *N.N.*]

SELBORNE SOCIETY NOTICES.

Council Meetings.—The next Council meetings will be held at 20 Hanover Square, W., on Tuesdays, November 6 and 20, at 5.30 p.m.

NEWS FROM THE BRANCHES.

Croydon and Norwood.—The opening lecture of the branch, held at North Park Ladies' College on October 6, was devoted to an illustrated description of "The Natural Beauties of Croham Hurst," by Mr. W. Murton Holmes. The lecture was in continuation of the campaign for the preservation of the whole of the Hurst for Croydon people.

The lecture dealt most exhaustively with the subject, Mr. Holmes speaking of the botany, the geology, the entomology, the ornithology, and several of the other 'ologies of Croham Hurst. Each section of the lecture was fully illustrated by the aid of the lantern, which was worked by Mr. E. A. Martin, secretary of the branch, and numerous admirers of the Hurst contributed slides. Among the many pictures thrown upon the screen were photographs taken at all times of the year, in spring, summer, autumn, and winter, and in each aspect the Hurst looked more beautiful than in any other !

On Saturday, November 17, Mr. T. W. Shore, F.G.S., has kindly consented, under the auspices of the Croydon Antiquities Protection Committee, to conduct members and friends over the old Archbishops' Palace, portions of which date back to Norman times. The party will meet at East Croydon (main-line booking office) at 2.15 p.m.

FIELD CLUB RAMBLES.

September 29.—The last ramble of the season was to Ranmore and Westcott, when a party of sixteen assembled at Dorking station under the leadership of Professor Boulger. Ascending the escarpment of the chalk through the private grounds of Denbies, after gathering blackberries and other autumn fruits on Ranmore Common, and admiring the view from Leith Hill, the party descended the steep slope and strolled by a quiet lane to Westcott, whence, after a belated tea, they walked back by starlight to Dorking. The list of plants observed was considerable and interesting.

SELBORNE SATURDAY AFTERNOONS.

Saturday, November 10.—LAMBETH PALACE (by kind permission of His Grace the Archbishop of Canterbury, for members only). Meet Mrs. Percy Myles at the entrance gate at 2.15 p.m. sharp. The guide has kindly been provided by the Archbishop.

Saturday, December 8.—NATURAL HISTORY MUSEUM, BOTANICAL DEPARTMENT. Assemble in the Entrance Hall of the British Museum (Natural History), Cromwell Road, at 2.15 p.m. Professor Boulger will give a demonstration, on the relations between plants and animals, in the Botanical Gallery.

ANSWERS TO CORRESPONDENTS.

H. Scott.—*British Spiders*, by E. F. Staveley, 10s. 6d. (Lovell Reeve).

F. W. Rowe.—The insect is a larval grasshopper, and can hardly have come out of the brazil-nut.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W. ; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

Nature Notes:

The Selborne Society's Magazine.

No. 132. DECEMBER, 1900. Vol. XI.

SELBORNIANA.

Financial Position of the Society.—If the donations made last year to the Selborne Society's general fund be repeated this year, it is probable that the deficit now reduced to £37 1s. 2½d. will disappear from the account for 1900; but otherwise it will not. It is not, surely, an unreasonable hope in such circumstances that those donations may be at least repeated, and the matter is specially referred to now as the payment of annual subscriptions, due on January 1 next, will afford a convenient occasion for sending donations. It will also obviously afford a suitable occasion for sending increased subscriptions.

In addition to the immediate purpose of redressing the financial balance, the Society has in view, as need hardly be stated, abundant opportunities for the useful application of funds.

Telegraph Poles.—E. G. Aldridge, F.G.S., F.R.Met.Soc., writes:—"I am glad that attention has been called in Nature Notes to the ruination of scenery by telegraph poles and wires. It is hardly too much to say that wherever I go my pleasure is seriously marred by these most unsightly objects. Even along Deeside the magnificent prospects are spoilt by telegraph-poles on the one hand and by telephone-posts on the other, so that the road-sides somewhat resemble the temporarily disused drying-ground of a laundress. At the ruins of Roxburgh Castle telegraph-poles are made to leave the highway, run between the ruins and the stream, and (after purposely, as it were, marring the river-scenery) rejoin the highway farther on. This kind of thing has become intolerable; and it would be

well, I think, if some persons of weight and influence would take the matter in hand at once, with a view to the adoption of road-side pipes or some other method of laying the wires, in lieu of the present disfiguring posts. What with railways, the rapid growth of towns, the introduction of corrugated iron into rural scenes, and the use of telegraph- and telephone-poles, the scenery of Britain has almost become a thing of the past."

The Destruction of Leaves.—The following answer to Mr. Pickering's letter appeared in *The Standard* for October 29:—"Sir,—Every country farmer burns the rubbish he rakes off his fields after the crops are gathered. Every gardener, both in town and country, burns all he can, and they all do it as the quickest and most effectual way of killing grubs, seeds, eggs, and spores. The Board of Agriculture recommends the burning of rubbish as a means of preventing the spread of fungoid diseases of plants; while the residual ashes can readily be spread over the land and dug in again to nourish succeeding growths. Every botanist knows that the plant gets its mineral constituents from the soil, and its carbon, oxygen, and hydrogen from the air and from water. The plant does get most of its nitrogen from the soil, but there is never any lack of that in the surface soil of London parks and squares. The smoke of the burning mass is surely less objectionable than the smell of a heap of decaying leaves would be, even if there were room for such a heap in the London parks and squares. I have always understood that any inferior vitality that the leaves of town trees may show is due to the poisonous effects of smoke and the choking of their stomata by soot, rather than to any lack of nutrient matter in the soil. In fact, it was found out in Manchester some years ago that the minute quantities of hydrochloric acid gas and sulphurous anhydride which are always present in the atmosphere of towns are absolutely fatal to vegetable life.—W. Spencer Turner, Willingham, Cambs., October 25."

We doubt if insect and fungoid diseases demand the burning of leaves in London. It is not a question of dead wood, or "rubbish." Residual ashes will not restore nitrogen, and the main question is whether some of our park trees are not suffering from a deficiency of this essential element.

Mosses a Study for Winter.—Mosses are in perfection at this season of the year, when flowering plants are drooping or dead. They can be collected and studied best in the cold season when they produce their fruit, and furnish an object for walks and exercise at a season when other pursuits have to be laid aside. How is it that so few people take up this interesting study? A new Society has just been formed to help beginners in Bryology, an offshoot of the "Moss Exchange Club," called the "Beginners' Section." Its object is to afford needful help

to those commencing the study. The secretary is Mr. E. C. Horrell, 58, Copleston Road, Denmark Park, S.E., who will be glad to afford information as to its mode of working.

NATURAL HISTORY OF QUEENSLAND.—I.

HERE is no more characteristic denizen of the Queensland bush than the dingo, the wild dog, who hunts the settlers' sheep, and whose melancholy howl o' nights is one of the well-recognised sounds of the bush that the Queensland squatter hears as he reclines in his "rocker" upon the verandah after his day's work "boundary-riding" or mustering cattle. The dingo can be easily tamed. The writer had a voyage many years ago from Australia; on the steamer was a dingo, consigned to the London "Zoo," with which he struck up an acquaintance. This soon ripened into friendship, and when he paid a visit to the Zoological Gardens a twelvemonth after arrival he found his old friend "Jack," the dingo, comfortably installed amongst the bears, and quite ready to resume affectionate relations with him.

Mr. Aflalo thus refers to the dingo in his "Natural History of Australia":—

"They grow to about the size of a wolf, and vary considerably in the matter of colour. I have also seen them grey and almost black. Though for ever quarrelling with the English dog on the stations, they breed pretty freely together, the native dog, which has only a dismal howl of its own, soon acquiring a feeble bark from its more civilised companions. It has been somewhat freely 'dispersed' by the settler, until it is now getting scarce in many districts, where baits impregnated with strychnine have done their work well. The result of its disappearance from the cleared country has been a plague of kangaroos, which have in turn to be thinned by organised 'drives.' Every man's hand is against this cowardly larrikin of the brute world, relentless despoiler of the sheepfold, through which it will run amuck, killing a number of animals by eating out the paunch, its favourite mouthful. Clever as the fox at feigning death, it is said that these animals have not moved a muscle until partially flayed; and old bush hands have learnt to make quite sure, in cases where there is any doubt, by cutting the throat. Unlike other dogs it rarely hunts in packs."

Many scientists prefer to look upon the dingo as an Asiatic importation. Save that it is in some districts made a substitute for the fox to furnish sport, the creature has never been put to any use whatever by the settlers. Even the black fellows only succeed in raising it to a half-domesticated state, and it is liable at any moment to run wild again. Whether owing to ill-

treatment or more natural causes, this animal seems to lack all the noble traits of the dog, being even lower in its morals than the pariah of Indian villages. It is the only true wild dog in the world, and Mr. Hudson compares it to the Aguard of South America.

REVIEWS AND EXCHANGES.

A Year with Nature. By W. Percival Westell, M.B.O.U. Henry J. Drane. Price 10s. 6d.

This handsome volume consists of agreeably written sketches, mostly relating to birds, by a well-known member of the Selborne Society and contributor to these pages. They are arranged according to the months of the year, and include well-illustrated studies of birds' beaks, tails and feet. The book contains more than 170 illustrations, most of them occupying whole pages, including twenty-two from photographs, by Mr. G. W. Webster, of those excellent bird-groups in the Grosvenor Museum at Chester, which we owe to the taxidermistic skill of Mr. Robert Newstead, the curator, and more than seventy, chiefly representing rural landscape in Hertfordshire, from the studio of Mr. J. T. Newman, of Berkhamsted. We should have liked to reproduce some of these, but our paper does not enable us to do justice to these exquisitely soft half-tone blocks. Half-a-guinea appears to us remarkably cheap for so attractive a presentation volume.

Problems of Evolution. By F. W. Headley. Duckworth and Co. Price 8s. net.

We regret that our space does not permit us to do justice to this important work. The author is already favourably known in the biological world by his "Structure and Life of Birds," and if, perhaps, less at home in palæontology and scantily furnished with illustrations derived from the vegetable kingdom, the present work shows him to be most thoroughly equipped zoologically. The whole work is eminently controversial, being an elaborate defence of the Neo-Darwinism of Weismann as against Neo-Lamarckism. Mr. Headley is, however, no mere copyist or populariser of his master's work, but argues his own views with a strenuous appeal to well-selected facts. Though an introductory chapter is prefixed to explain Darwinism for "the general reader," the work is not easy reading. The modern problem of "Isolation" is discussed, and half the work deals with human evolution, concluding with a chapter on "the great unprogressive people," which, however, the writer assures us, was written before the Boxer rising. The illustrations were hardly necessary and certainly need not have entailed the printing of the whole work on such heavily glazed paper. As it is the volume weighs over 35oz. avoirdupois, a serious drawback. Mr. Headley has given us a work with which up-to-date biologists will have to reckon; but we wish that he, as an instructed naturalist and no mere *à priori* speculator, would give us a comprehensive handbook of modern biology for the general reader, not a laboratory guide or "cram" text-book, but somewhat on the lines of Dr. Wallace's "Darwinism."

Raggylug the Cottontail Rabbit and other Animal Stories. By Ernest Seton-Thompson. With pictures by the author. David Nutt. Price 3s. 6d.

These altogether delightful stories need no introduction, for every lover of Nature ought to recognise them as selected from "Wild Animals I have known." Some readers who do not yet know the larger book may rejoice in having these four tales in a cheap form, but they will inevitably, like Oliver Twist, ask for more.

Shakespeare's Greenwood. By George Morley. David Nutt. Price 5s. nett.

This dainty little buckram-bound volume consists of essays on the language, superstitions, customs, folk-lore, birds, trees and poets of Warwickshire, with

sketches of the Rev. Dr. Samuel Parr, LL.D. and of George Eliot. Though his literary style leaves something to be desired, Mr. Morley has got together many interesting facts. Selbornians will sympathise with the sentiments of the following passage:— "In the greenwood near my home the bullfinch is not by any means so rare as the goldfinch; in fact, I have seen whole flocks of them round

A WARWICKSHIRE LANDSCAPE.
By CAROLINE WATTS, from "Shakespeare's Greenwood."
(*By permission of David Nutt, Esq.*)

the Coomb Farm in the early summer; but that is scarcely a sufficient reason for the wholesale catching of this pretty and merry creature, whose only offence is that he has a fondness for tapping the buds of fruit trees. Doubtless the angry farmer who fires small shot at him does infinitely more damage to the tender buds than the bill of the bullfinch, and any harm 'the bully' may do is, I think, amply atoned for by the number of insects he clears from the trees." Surely, Mr. Morley, Shenstone did not call us poor benighted Londoners "Augusta's venial [*sic*] sons," nor did George Eliot write of "the lofty grained ceiling" of Cheverel Manor! The book contains eight charming illustrations, including Shakespeare's bust, cottage, and birth-room and Arbury Hall, the "Cheverel Manor" of "Scenes of Clerical Life," by Miss Caroline Watts.

North American Fauna, No. 19: *Results of a Biological Reconnoissance of the Yukon River Region.* United States Department of Agriculture.

This is another of those excellent little monographs issued by the American Government, several of which we have recently reviewed. It contains a general account of the region and an annotated list of its mammals, by Wilfred H. Osgood, illustrated by a map of Alaska, photographs of scenery and plates of skulls, and an annotated list of the birds by Dr. Louis B. Bishop. Five new species and four subspecies of mammals and three new forms of birds are described in this report; but, of these twelve, only four skulls are figured. It would be well if figures, at least of skulls or other characteristic parts, accompanied all such first publications.

Inorganic Chemistry. By Professor Raphael Meldola, revised to date by J. Castell Evans, F.I.C. Fifth edition. Thomas Murby. Price 2s.

Well may Mr. Castell Evans claim that a life of more than twenty years is in itself a testimonial to the original excellence of Professor Meldola's "Inorganic Chemistry," and certainly we know of no work at anything like the price as comprehensive as is this manual in its present revised condition. We have here a succinct account of the periodic law and of the principles of spectrum analysis and its application to celestial as well as terrestrial bodies; and not only do all the recently discovered elements find a place, but the description of the prepara-

tion and properties of the elements and their chief compounds is supplemented by a short account of the principles of analysis. If any "general reader" wishes for an example of the achievements of chemistry as an exact science, we would commend to his notice the remarkable results tabulated on p. 173.

Received :—*Knowledge*, *Science Gossip*, *The Naturalist*, *The Irish Naturalist*, *The Animal World*, *The Animals' Friend*, *Our Animal Friends*, *Humanity*, and *The Agricultural Economist* for November.

NATURAL HISTORY NOTES AND QUERIES.

Cat and Dog.—We have a mongrel pug with a respectable straight nose, a lively young rascal about six months old. We have also a dark tortoiseshell cat with whom he is on the best of terms. The two sleep together in a small box in an outhouse, nestling close to keep each other warm. A fortnight ago pussy deposited four kittens in the box, of which two were at once disposed of in the usual way. Pug was greatly interested and puzzled with the two which remained. He touched them and sniffed at them, but made no protest. Two days later, however, he rushed into the kitchen in great glee with a kitten in his jaws, shaking it and tossing it as if it were a rat. The kitten was dead and he was severely reprimanded, but a few hours after he came in again playing the same pranks with the second, which he had also killed. Puss seemed a little disconsolate for a day or two, but has quite got over it, and is as happy as ever with her children's murderer. F. T. MOTT.

Birstal Hill, Leicester.

How Rats carry Eggs.—The discussion referred to by Mr. Read as to how rats carry eggs was started by me in consequence of a number of hen's eggs being found in holes in a ditch at a distance from where they were laid. Several of these eggs were brought to me, and I could detect no breakage or puncture in them. Is it possible for a stoat to carry a hen's egg in its mouth without breaking away the shell after piercing it? One would imagine that the weight of the egg alone would be sufficient to tear it from the creature's fangs; and could a stoat open his mouth wide enough to grip a domestic fowl's egg in the way the moor hen's egg was treated, as related by Mr. Read?

Market Weston, Thetford, EDMUND THOS. DAUBENY.
November, 1900.

Bat.—I saw a bat in full flight at 11.45 in the forenoon to-day (November 11). I should be glad to know whether you or any of your readers have ever observed one flying about in the very middle of the day. As in most mild autumns, they are a common sight at dusk now.

Dunwich, Suffolk. M. E. B.

[The occurrence is not, I think, very unusual.—ED. *N.N.*]

Simulation of Injury in Birds.—The observation made on the nightjar in regard to this habit, appearing in the "Natural History Notes" of the current number, recalls to my mind two similar instances which have come under my notice on two different occasions.

The actor (or actress) in the one case is a closely allied genus, the "tawny frogmouth" of the latest "Vernacular List of Australian Birds" (*Podargus strigoides*), better known as the mopok, but quite similar in habits to the European goatsucker. It happened on the lower Moorabool, not far from Geelong, where I was one day in search of young parrots. I had climbed a gum-tree on the edge of a lagoon, when the bird dropped to the ground, from the branch I stood on, like a stone, and with as audible a thud too, where, moreover, I had not expected any other living being. My surprise was considerable enough on this account alone, but did not diminish when I reached the ground myself (a proceeding which I performed in a more orthodox style than the one set me an example in by the bird) to see the latter hobble and flutter away, all the time counterfeiting the

most serious injury received. This I should have believed to have been the case to this hour, only for the manner in which it regained its equilibrium and took to its wing on my trying to come up with it, which fully undeceived me of my delusion. It was a clever piece of acting throughout. Although I naturally looked for eggs or young, it being just the season, I failed to discover any.

The other case concerns a species of birds in which the whole of its tribe perform this trick in chorus, as I have witnessed nearly every day in South Gippsland, where they are plentiful. This is a chat-like little white and black bird, *Epthianura albifrons*, or the "white-throated chat" of the same Vernacular List, similar in habits, as well as in their haunts, to our whinchat. At breeding time, for this it was just then, being at the end of the year, I was startled again the first time I saw it by the cunning way in which these birds pretend to injury when approaching their nesting places, which are everywhere amongst the low scrub and the furze of the open ground. These active little birds are inventive for different kinds of injury, some feigning lameness in a leg by limping along the path or foot-tracks, others pretending fracture of a wing, all the while uttering pitiful cries and plaintive sounds in the most approved fashion, until probably all danger of intrusion on their domestic circle is past, when they fly away with a chirp, apparently pleased with the success of their cleverly contrived imposition.

The theory as to the development of the habit of simulation for the purpose of defensive tactics may not unreasonably be applied, seeing that both species are rearing their progeny in easily accessible places, but so do others of which we have no such evidence. However, it will be far more difficult to reconcile these cases with the idea of "developed acquirement" against "human depredations," even by leaving the possible (if not more likely) pre-existence of the opossum and the native cat out of the question. But what possible designs for persecution, even the most evil-minded and dark-souled of blackfellows could have entertained towards the little harmless and insignificant creature quoted in the second instance, is not quite so obvious. ED. DEGEN.

45, *Conizer Road, Parsons Green, S.W. October* 17, 1900.

Remarkably tame Robins.—"I suppose few are aware that in the song of the robin may be clearly detected the notes of many of our best-known smaller song birds, the reproduction being often so clever as to deceive even the most experienced ear." So wrote C. E. C. in November NATURE NOTES, and I must acknowledge that until some ten days previous to reading it, I was amongst that few, never having noted the robin as a mimic; but on October 26, whilst naturalising with my friend R. Kearton, F.Z.S., on Hickling Broad, we both simultaneously heard what we for the moment thought to be a most belated sedge warbler. "No sir, excuse me," said our worthy boatman, Alfred Nudd, "it is a robin." The ever-watchful eye of the marshman naturalist had instantly twigged the impostor perched upon a sallow spray, he, standing up to quant, having if not a more discriminating ear, at any rate a wider field of vision than we two sitting down. Besides this curious coincidence of hearing and reading of the same (to me) new thing in bird song upon two such approximate dates, it is worthy of remark that the fact of Mr. Kearton and myself (who both of us ought to have known better) being taken in by a robin counterfeiting a sedge warbler, is additional evidence, not only of "the reproduction being often so clever as to deceive even the most experienced ear," but also of how careful we all ought to be in criticising the recorded observations of others, for, had C. E. C.'s note appeared only two months ago, I, after reading it, should have said, "Yes, *very* few are aware that in the song of the robin may be clearly detected the notes of many of our best-known smaller song birds."

M. C. H. BIRD, M.B.O.U.

A Robin Friend.—Every morning after breakfast a robin friend watches from a lilac bush for my coming out of doors. He flies to me when I offer him a few crumbs of oatcake, and perches upon the open palm of my hand, which I hold out at arm's length. He will not take the oatcake if it is broken in pieces too large for him to swallow at one gulp. I steal glances at him, as he does not like to be watched while eating. I have sometimes tried to tickle his toes by

gently raising one of my fingers, but the slightest movement frightens him away. If he is not on his usual perch when I go out, the cry, "Where is my robin?" generally brings him to me. If I have forgotten to provide myself with crumbs I am reminded of what is expected of me by a loud chirp, which puts the question as plainly as words could do, "Why have you not brought breakfast?" This free and easy footing, however, only occurs at the present season of the year, for in summer he refuses to own the acquaintance. The frostier the weather, the more ready he is to come. A few mornings since we had eight degrees of frost, and I was sure he would not be far off. He lighted upon my hand the moment it was held out, looking at me gratefully with his wild bright eye. It is sometimes difficult to distinguish the cock and the hen robin from each other. But the hen bird is the smaller of the two, and the red patch on her breast is less vivid than that of her mate (compare Yarrell, i. 262). I should have mentioned that this is the second year that the robin has fraternised with me.

Keithhall Manse, Aberdeenshire, November 14, 1900. J. D.

Robins. — On pages 217-218 of NATURE NOTES for November last "C. E. C." gave an interesting account of some remarkably tame robins. As your correspondent says he understood, hen robins have red breasts, but the colour is of a duller hue than in the male robin. Butler says that "nestlings have all the smaller feathers of the upper and under surfaces spotted in the centre with buff and tipped with blackish, but birds of the year differ but little from their parents, excepting that their colours are a little paler." Robins are very quarrelsome birds, and only a fortnight ago I heard a noise in our garden and discovered a pair of robins fighting. By the time I got on the spot the fight was ended, one of the combatants having his eye pecked out and bleeding profusely, but when I tried to pick him up he had just strength enough to flutter away amongst some laburnums, where I lost him.

Penzance, November 8, 1900. ARTHUR W. HEXT HARVEY.

Parroquets.—In your last issue Mr. S. G. Edwards asked whether it is possible for some parroquets which he saw in Hampstead Lane to breed and survive a winter in this climate. I do not know about the breeding, but I think they might survive the winter. A neighbour of mine once had a large aviary, which was composed principally, I believe, of foreign birds. One day, in disgust, as they were fighting so much, he opened the door of the aviary and turned all the birds out, and for some years afterwards we constantly saw some very brilliantly-coloured birds about the neighbourhood. I am afraid of one thing about Mr. Edward's parroquets, and that is that some young and enterprising ornithologist, with more enthusiasm than common sense, will see the birds in question and wish to include them in the list of British birds, which is already inordinately swollen by so-called "visitants," in very much the same manner as if Mr. Kruger came to England and got shot (as he probably would), and was claimed as a "British subject" because he was killed on British soil.

Penzance. ARTHUR W. HEXT HARVEY.

In reply to Mr. S. G. Edwards' query "Is it possible for these birds to breed and survive a winter in this climate?" in his communication on parroquets in the current issue of NATURE NOTES, I presume the birds he saw were some kind of Australian parrakeets. The grey-headed lovebird, Australian budgrigar, the cockateel, and many other well-known Australian and Brazilian species would breed and survive our winters and soon become very numerous, for they are in fact as hardy as *Passer domesticus*; if they could only be protected for a season or two from guns and cats. From the cats they would soon learn to protect themselves, against the gun they are helpless. It seems as if, when the average Englishman sees a rare or strange bird or other creature, he must go and shoot it. As to whether they would be a desirable acquisition to our avifauna is quite another matter: I am afraid not. Many parrakeets have been kept in garden aviaries, exposed to our weather all the year round, and under such conditions have regularly reared young. If you think it would be of any interest to readers, I shall be pleased to supply a list of the same in a future issue.

6, *Rylett Crescent*, WESLEY T. PAGE, F.Z.S.
Shepherd's Bush, W.

[Please do so.—ED. *N.N.*]

Mannikins.—I notice "A Selbornian" in "Our Aviary," speaks of the mannikins as being very disappointing. The majority of so-called aviaries are simply moderate-sized cages, and under such conditions they are dull beyond description, African, Indian, and Australian varieties alike. But let "Selbornian" put up a garden aviary (constructed much as an ordinary fowl run) consisting of a small shed and good-sized open flight, covered in with half-inch mesh wire netting, and containing a few conifers or bushes. It must be sheltered on the north and east. Under such conditions, instead of being dull and listless, the mannikins will charm him with their vivacity and entertaining ways: he will soon learn their love songs, angry notes, their quaint courting dances and numberless amusing antics and habits, and in addition some of the species will nest, lay, incubate and rear their progeny; while others will only nest and lay. Under such semi-natural conditions their life-histories will be practically open to him, *ennui* will be unknown, the birds happy, contented and healthy, passing away mostly of old age. All the Munias (mannikins) in such an aviary may be left out of doors all the year round; thus giving continued pleasure to him, such as can never be obtained from our feathered pets kept in the confined limits of the largest drawing room aviary, or rather cage.

6, *Rylett Crescent, Shepherd's Bush, W.* WESLEY T. PAGE, F.Z.S.
November 16, 1900.

Terns.—I regret to inform readers of NATURE NOTES that the colony of terns which have for many years bred on the Scilly Islands are rapidly leaving them, on account, I believe, of the persecution they receive from egg hunters, who take every egg they can find. The colony was composed chiefly of Arctic Terns, but there were a few Common Terns.

Penzance. ARTHUR W. HEXT HARVEY.

Mimicry in Starlings.—A month or two ago there was some correspondence on this subject, in which, as I had not then noticed much about it, I did not join. Last week I heard a starling imitate a coot so well that it deceived me, and I was looking about for the bird when I espied the mimic seated on some telegraph wires. Since then I have heard a starling mimic a swallow and a sparrow, the imitation in both cases being marvellously accurate.

Penzance. ARTHUR W. HEXT HARVEY.

The Plague of Blackbirds.—What Mr. W. B. Gerish says of birds and fruit is unquestionably true. I have a hedge of blackberries on one side of my ground and one of raspberries on another, and all this summer I have had no interference with the fruit, though there is no other in the immediate vicinity, and we have many blackbirds and thrushes which we encourage in every way. But I have on the grounds vessels of water kept always supplied, to which birds and squirrels may come to quench their thirst. I am certain that none of the berries have been taken. Winter fruits are often eaten only for the seeds in them, but the pulp of raspberries is evidently no attraction to the birds except for the juice. The same holds good for squirrels. Give them water in convenient places and they will not take the trouble to get at the sap of the pine trees. Many squirrels visit our wood, where are trees of many kinds, but not a twig has been touched since I began to lure the squirrels to visit us. If the great Scotch lairds who complain of the squirrels for scotching their trees would provide that a vessel of water was kept always accessible to them in the plantation, there would be no harm done to the trees (though to tell the truth, I have never found any done), and it would cost them less than shooting off the squirrels.

Deepdene, Frimley Green, Surrey. W. J. STILLMAN.

The Cruelty of Nature.—When I took possession of my present home in a woodland, I put out many nesting boxes for the birds. Last spring, when nesting was going on, I saw a starling and a small bird (I think a tit) fighting at the entrance to one of the boxes, and saw the starling driven away. For some time I watched the box to see how the brood went on, but I never saw a bird at it again. In the autumn I took it down to enlarge the opening for squirrels, and I found it nearly filled with moss, bits of cord, rags, &c., &c., and nearly at the

bottom the skeletons of four little birds, half fledged. They had been buried under six inches of rubbish, probably by the starlings, angry at being driven out.

W. J. STILLMAN.

Wood-pigeons.—These birds go on breeding through spring and summer till stopped by frost. I have reason to believe that there is a nest, at least, in my garden at this moment. I judge by the cooing, which invariably, I think, accompanies nesting. I once found a wood-pigeon sitting on two eggs, in the Duke of Roxburgh's plantations, on November 16 and 17.

GEORGE ROOPER.

Tameness in a Hedge-sparrow.—I notice recorded by correspondents of NATURE NOTES not a few instances of tameness in wild birds. I am writing to show that it is not only confined to robins. Towards the end of September, 1899, I was sitting in a shrubbery reading, when my attention was drawn to a bird staring impertinently at me with a pair of large black eyes, bowing and curtseying like a marionette. Wishing to see it closer I crept quietly behind a bush and approached it. Contrary to my expectation, instead of flying away on seeing me, it still continued to stare; so I cautiously put out my hand and was able to touch it. I then perceived it was a hedge-sparrow. As soon as I had touched it, it hopped away, and I drew back, not wishing to frighten it. It flitted off into some undergrowth, and by doing so showed it was not hurt, as one would have supposed. In the same place next day it allowed me to approach quite near, and when I held out my hand it looked into it, always keeping a few inches out of my reach. As I went away next day I was not able to renew acquaintance, which I regretted deeply. Never since have I had an experience so close and intimate with wild Nature.

Neufchâtel, Aisne, France. D. MATHESON.

Rooks.—Could any of your readers give information as to the progress of the rookery in Connaught Square? Last spring the rooks built about twelve nests in the plane trees, and formed quite a nice colony. It would be interesting to hear whether they persevered and were successful in their family affairs.

32, *Shaftesbury Avenue, W.*, P. E. CLARK.
October 30.

Food for Martins.—May I ask your assistance and that of your readers, in the following case?

There are three young martins still left in a very sheltered corner under the eaves of a rather high out-building in our garden. As I am given to understand that martins left behind in this way usually die for want of food when the severe weather arrives, I should be glad if you or any of your readers could suggest any way by which we could provide the little birds with suitable food that they would eat, or any means of helping them to tide over the cold weather?

LILLY HARGRAVE.

Brownslow, Great Budworth, Northwich,
October 31, 1900.

Hornbills.—The other day, when looking at the hornbills in the Natural History Museum, I wondered of what use the strange excrescence on the bill is to them. It probably has some connection with their food or mode of procuring it, but I don't know what. Will some one kindly enlighten me?

Cambridge Lodge, St. Albans, ROSE TURLE.
November 10, 1900.

[Professor Newton, in the "Encyclopædia Britannica," states that the function of the huge epithema in the hornbill is entirely unknown; so that, now that Mr. Grant Allen is dead—unless Mr. Kipling will explain it in one of his "Just So" stories—we must await farther observation.—ED. *N.N.*]

Butterflies and Birch Sap.—I have repeatedly seen butterflies attracted by the sap of the birch and other trees. They are always, as Dr. Snow states, *Vanessidæ*. The only *V. antiopa* I have seen or captured in England was feasting on the sap of a sallow. In August, last year, a quantity of red admirals were busily engaged on the trunk of an oak near here from which sap was exuding.

November, 1900. EDMUND THOS. DAUBENY.

I was much interested in Dr. Snow's note *re* "Butterflies and Sap" in the November number of NATURE NOTES. I have noticed this summer that a plum tree in my garden has exuded a considerable quantity of sap, which probably accounts for the fairly large number of red admirals and peacocks which I have seen on and about the stem of the tree. I wondered many times what could be the attraction.

Swymbridge, North Devon, W. SHELLEY.
November 14, 1900.

[Is it not gum rather than sap which exudes from your plum-tree? A main point in Dr. Snow's note was the fermented condition of the birch sap.—ED. *N.N.*]

Earwigs.—The poor despised earwig, for which hardly anyone has a good word, is not the unmitigated nuisance it is generally supposed to be. Earwigs are great enemies of the scale insect, one of the most difficult pests to combat in a green-house. Some plants infested by scale can be washed or scrubbed, while others are too delicate to be treated thus. Maiden-hair ferns are very liable to their attacks, and the usual remedy is to cut the plants down and let them grow again. One of my maiden-hair ferns that was covered with scale I put under a bell glass and placed two or three earwigs on it. They at once set to work in broad daylight, though usually nocturnal in their habits, and in a short time the scale had disappeared. EDMUND THOS. DAUBENY.

Market Weston Rectory, Thetford, Norfolk,
November, 1900.

Oleander Hawk-moth (*Metopsilus nerii*).—The readers of NATURE NOTES will doubtless be interested to know that a fine specimen of this beautiful and rare moth has been captured quite recently at Teignmouth. It was not alive when I saw it, but I was much struck with its exquisite beauty and great size. The last seen here was in 1832, and is mentioned in Jardine's Naturalists' Library. It is, I believe, seldom seen in England. About the same time a fine death's-head hawk moth (*Acherontia atropos*) was also captured; but this is not so rare as the Oleander. Both are in the possession of Mr. J. J. A. Evans, of this town.

Teignmouth. CAROLINE E. FARLEY.

Ivy.—I am much pleased to find that you endorse my views of this lovely creeper. As I said, I would beg that any of your readers who may have formed, from tradition and hearsay, the conviction that it is injurious to the trees that support it, will examine a dozen or a hundred trees with, or the same number without, ivy on them, and state the result. I may add that besides its beauty, the ivy is of the greatest benefit to the game-preserver, furnishing, as it does, concealment, food, and shelter to the pheasants.

Nascott House, Watford. GEORGE ROOPER.

If this question is not finally closed I should like to say a word or two on the side of the prosecution. I have in my garden and meadow some rather fine old oaks, three (or possibly four) of which seem to me to be of the same age. All but one have good "heads" and fine spreading boughs. I believe I can certify that one bough is, by measurement, eighty feet long. But one has a poor stunted top; and, in Kentish phrase, is "going home" faster than any of the others. It may, of course, be a mere coincidence, that when I came here at the end of 1869, I found this tree matted round thickly with ivy. I cut this away, but it was too late to renew its youth. One swallow does not make a summer; but if I may venture to say so, we want an accumulation of cases like this, of trees with ivy and without ivy, but otherwise similarly circumstanced.

Can any correspondent mention trees that have grown to a great age, preserving their health and vigour as well with ivy as others have done without it? I do not think I can remember such; I think the finest old trees that I have seen have been free from ivy, or nearly so.

Otham Parsonage, Maidstone. F. M. MILLARD.

Late Flowers.—Last Sunday (November 11) I observed in blossom, *Stachys Betonica*, *Solidago Virgaurea*, *Hieracium boreale*, *Achillea Millefolium*, *Scabiosa succisa*, no doubt owing to mildness of the season.

Cranbrook. A. W. HUDSON.

Cydonia japonica.—In our garden we have a "japonica," which although it had flowered annually for the last ten years, had never borne fruit. This summer, however, it has yielded a large fruit resembling an apple. I should be very pleased if any one could tell me the habitat, &c., and method of fertilisation of this plant, for it might throw some light upon this singular occurrence.

Herne Hill. W. COCKSEDGE.

[The Japanese quince is certainly a native of Japan and fruits but seldom in this country. It would seem, however, to be capable of self-pollination.—ED *N.N.*]

SELBORNE SOCIETY NOTICES.

Council Meetings.—The next meetings of Council will be held on Tuesdays, December 4 and 18, at 5.30 p.m., at 20, Hanover Square, W.

SELBORNE SATURDAY AFTERNOONS.

Saturday, November 10.—Forty members assembled for the first meeting of the winter series and were conducted under the Morton gateway, through the Library, Guard-room, Water-tower, Chapel and so-called Lollard's Tower of Lambeth Palace, by the porter, Mr. Parker, who gave a most interesting history of the buildings and their associations. A visit to the Church and, in fading light, to the Tradescant tomb in the churchyard, where Professor Boulger gave an account of the Tradescant family, concluded the afternoon.

Saturday, December 8.—NATURAL HISTORY MUSEUM, BOTANICAL DEPARTMENT. Assemble in the Entrance Hall of the British Museum (Natural History), Cromwell Road, at 2.15 p.m. Professor Boulger will give a demonstration, on the relations between plants and animals, in the Botanical Gallery.

Saturday, January 12.—ST. PAUL'S CATHEDRAL. Meet Mrs. Percy Myles at the West door (inside) at 2.15 p.m. sharp. The Rev. Henry Scott-Holland, Canon of St. Paul's, has kindly consented to act as guide to the Selbornians.

NEWS FROM THE BRANCHES.

Clapton (Lower Lea Valley) Branch.—The first meeting of the winter session was held on Saturday, November 17, at the North-East London Institute, Hackney Downs. In spite of very inclement weather there was an attendance which promises well for the success of the session. The proceedings were of an informal and social character, but microscopes and various specimens of interest were exhibited.

The chairman made a feeling reference to the loss this Branch has recently sustained by the death of Mr. Jas. D. Hardy, one of the Vice-Presidents, who had long taken a very active part in the work of the Society in this district.

NOTICES TO CORRESPONDENTS.

1. All communications for NATURE NOTES must be authenticated with name and address, not necessarily for publication.

2. The return of an unaccepted contribution can only be guaranteed when it is accompanied by a stamped and addressed envelope. We cannot undertake to name specimens privately, to return them, or to reply to questions by letter.

3. All communications for any number must be in the Editor's hands by the 10th of the preceding month.

4. Communications for NATURE NOTES, books for review, specimens for naming, &c., should be addressed to the Editor, PROFESSOR BOULGER, F.L.S., F.G.S., 34, Argyll Mansions, Addison Bridge, London, W.; letters connected with the business of the Society, enquiries as to the supply of the Magazine, subscriptions, &c., to the Secretary, A. J. WESTERN, Esq., 20, Hanover Square, W.

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